Table 1
Summary of Costs for the Phase I Removal Action
Riverdale Chemical Company - Chicago Heights, Illinois

Item	Description	Cost
Health and Safety	Includes costs of health and safety training and physicals for subcontractors	$39,192.00
Soil Handling Laraway Landfill (5334.95) Envirotech Landfill (3012.49)	Includes costs for excavation of soil and stockpile management.	 $12,803.08 $22,673.54
Additional Excavation	Includes the cost of excavation of additional soil in the railroad unloading area.	$34,823.00
Clean Backfill	Includes the costs of limestone for the liquid storage area.	$22,256.00
Disposal of Soil (Special Waste) Laraway Landfill (5334.95) Envirotech Landfill (3012.49)	Includes costs for transportation of and disposal of soil as a special waste.	 $109,955.89 $200,060.63
Sampling and Analytical	Includes costs of drilling, laboratory, waste characterization and other misc. sampling costs.	$84,179.99
Engineering (June through December 2000)	Includes costs of document preparation, oversight, and management.	$166,993.60
Phase I Removal Action		$692,937.73

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Riverdale
CHEMICAL COMPANY

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February 2, 2001

Ms. Callie Bolattino
On-Scene Coordinator
USEPA, Emergency Response Branch, Region 5
77 West Jackson Boulevard (SE-5J)
Chicago, Illinois 60604

Subject: Riverdale Chemical Company
Phase I Removal Action Report

Dear Callie:

Riverdale Chemical Company is submitting the Phase I Removal Action (RA) Report per the requirements of the Administrative Order on Consent (Docket No. V-W-01-0-621), Section V: Order, Part 2.4: Final Report. The report describes the activities conducted during the Phase I RA. Copies of the analytical data have been submitted to the USEPA as attachments to the Monthly Progress Reports (July 2000 through December 2000). Copies of the waste manifests, costs associated with the removal action and other miscellaneous information will be submitted under separate cover. Please contact Riverdale with any questions or comments.

Sincerely,

Peter Bibby

Dr. Peter Bibby

Attachments: Phase I Removal Action Report

cc: Karen L. Peaceman
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PHASE I REMOVAL ACTION REPORT

RIVERDALE CHEMICAL COMPANY

Prepared For
Riverdale Chemical Company
Chicago Heights, Illinois

Prepared By
RMT, Inc.
Chicago, Illinois

February 2001

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List of Acronyms

bgs	below ground surface
CLP	Contract Laboratory Program
COPC	Compounds of Potential Concern
CRDL	Contract Required Detection Limits
FSAP	Field Sampling and Analysis Plan
HSP	Health and Safety Plan
IEPA	Illinois Environmental Protection Agency
LCS	laboratory control sample
MDL	Method Detection Limit
mg	milligrams
OSHA	Occupational Safety and Health Administration
QAPP	Quality Assurance Project Plan
RI/FS	Remedial Investigation/Feasibility Study
TCLP	Toxicity Characteristic Leaching Procedure
USEPA	United States Environmental Protection Agency

Section 1
Introduction

This Phase I Removal Action (Phase I RA) Report (the Report) was prepared on behalf of Riverdale Chemical Company (Riverdale), to summarize the activities that have occurred at the site during the Phase I Removal Action. The work was conducted under an Administrative Order on Consent (AOC, Docket No. V-W-01-0-621) between Riverdale and the United States Environmental Protection Agency (USEPA) dated November 16, 2000.

The Phase I RA Report describes the removal action of contaminated soil at three major areas of construction at the Riverdale Site. These construction areas are: 1) installation of upgraded secondary containment around the liquid storage area (liquid storage area); 2) expansion of the raw materials warehouse (raw materials warehouse); and 3) installation of a spill containment basin and 20,000 gallon storage basin at the railroad unloading basin (railroad unloading area). This Report also presents the results of additional soil sampling at the utility area north of Building No. 2, the low lying area in the southeastern portion of the site, the southwest side of Building No. 3 (Hartwell Building expansion) and off-site drainage ditch.

Riverdale entered into negotiations of the AOC, and with oversight from the USEPA, initiated construction of the three areas in July 2000. Activities conducted prior to finalizing the AOC were performed as an Emergency Removal Action under contractor oversight. The approved Phase I RA Work Plan is limited to work that was completed in October and November 2000. The final Work Plan addresses the removal action for contaminated soil encountered during construction upgrades to the secondary containment system around the liquid storage area (liquid storage area), and sampling at the off-site drainage ditch. Specifically, the components of the approved Phase I RA Workplan include the following:

- Soil sampling at the east side of the liquid storage area.
- Excavation and off-site disposal of all soil under the eastern side of the liquid storage area which exceed a hazard index of 1, an excess cancer risk of 1×10^{-5} for individual chemicals, an excess cumulative cancer risk of 1×10^{-4}, or dioxin (2,3,7,8-TCDD) above 5 parts per billion toxicity equivalents (TEQs) with vertical extent based on the construction requirement (*i.e.*, 9 feet below ground surface (bgs)), and the horizontal extent defined by confirmatory sampling and the boundaries of the liquid storage area.
- Soil sampling at the off-site drainage ditch.
- Characterization of excavated soils to determine off-site disposal requirements.

Additional components of this Phase I RA Report include a description of the work conducted in July through September 2000. This work was conducted under the Emergency Response Program, with an oversight contractor present during the majority of the activities. The additional components of Phase I RA include the following:

- Soil sampling at the liquid storage area (west side)and at the raw materials warehouse.
- Soil sampling in the area where utilities (utility area) are located at the northern end of the site.
- Soil sampling in the low lying area located at the southeastern side of the site.
- Excavation and off-site disposal of soils under the raw materials warehouse, if any, with the vertical extent based on the construction requirement; and the horizontal extent defined by confirmatory sampling and the boundaries of the raw materials warehouse.
- Excavation and off-site disposal of soils under the proposed railroad unloading area, with vertical extent based on the construction requirements.
- Characterization of excavated soils (liquid storage area, raw materials warehouse, and railroad unloading area) to determine off-site disposal requirements. It should be noted that all soils excavated during construction activities were characterized and shipped off site for disposal.

This Report presents the objectives and the technical approach used in completing the tasks outlined above. It also describes the methods used to complete each of the components of the Phase I RA.

The Report has been organized into the following four sections:

- Section 1: Introduction - provides the basis, approach, and organization of the Report.
- Section 2: Project Background - summarizes the information presented in the previous studies conducted at the Site.
- Section 3: Soil Sampling and Removal Activities - presents the scope of work and a description of the activities that occurred on site during the Phase I RA. The work is described by construction areas (raw materials warehouse, railroad unloading area, liquid storage, Hartwell Building expansion) or sampling areas (utility area, low lying area, off-site ditch). For example, soil sampling, confirmatory sampling, disposal characterization, and excavation of the raw materials warehouse; are discussed in Section 3.2.
- Section 4: Analytical Results – presents the results of the analysis for each of the areas.
- Section 5: Certification – provides certification as required in the AOC
- Section 6: References - provides document references.

The Phase I RA activities were conducted using procedures described in the Phase I Work Plan; including the associated Quality Assurance Project Plan (QAPP), the Field Sampling and Analysis Plan (FSAP), and the Health and Safety Plan (HSP).

Section 2
Project Background

The Riverdale Chemical Company (Riverdale) in Chicago Heights, Illinois, is an active industrial facility used for the formulation and packaging of various agricultural and turf chemicals. Riverdale has been conducting an RI/FS under an AOC at the site since 1985. The property was sold in 1999 and the new owners assumed responsibility for the environmental liability but also desired to upgrade the physical facilities. Therefore, in July 2000, three major construction projects were initiated including, a raw material storage warehouse (at the current raw material storage pad), a liquid storage facility (at the above ground tank farm), and an upgrade of the railroad unloading area (at the railroad siding located between Buildings No. 2 and No. 3) mandated by the Department of Agriculture requirements. In order to expedite the construction projects and maintain an environmentally safe working environment, Riverdale began negotiations with USEPA to conduct their facility improvements under USEPA oversight and following the requirements of the negotiated AOC.

2.1 Current Site Conditions

The Riverdale facility is an active manufacturing operation with on-going expansions and upgrades necessary to meet regulatory requirements and business needs. There are four main buildings (Figure 2-1) at the site: Building No. 1 (Finished Goods Warehouse), Building No. 2 (Manufacturing and Administrative Building), Building No. 3 (Hartwell Building used for material storage and manufacturing), and Building No. 4 (Raw Materials Warehouse). The liquid storage area consisting of a new above ground tank farm, is located in the southern portion of the site. The upgraded railroad unloading area is located between Building No. 2 and Building No. 3.

The site is approximately 10 acres in size. Figure 2-2 presents the current site conditions. Figure 2-3 presents sampling locations collected during the RI and sampling locations collected during the Phase I RA. The property is relatively flat and approximately 85% of the surface is covered with buildings, concrete or compacted limestone. The far eastern unpaved portion of the site is not used for facility operations. It is slightly lower in elevation and is vegetated. There is a low lying area located in the southeast corner where surface water runoff accumulates. Based on recent discussions and a site visit from the U. S. Army Corps of Engineers, this low lying area does not appear to be jurisdictional wetlands. Written confirmation of that determination is pending.

The local stratigraphy was evaluated from various site-specific boring logs. A series of cross-sections were prepared based on these boring logs from the Remedial Investigation and recent geotechnical borings required for construction. The cross-section locator map is shown in Figure 2-4. Three cross-sections were developed: one east/west along the southern portion of the site (A-A') (Figure 2-5), and two north/south on the western portion of the site (B-B') (Figure 2-6) and eastern portion of the site (C-C') (Figure 2-7). Based upon these figures, the vertical soil profile is generally 2 to 4 feet of variable soil fill over low permeability clay. This generalized profile is consistent throughout the site. Localized perched water was encountered at varying depths within the upper 15 feet, generally at locations under and adjacent to buildings. The presence of the perched water appears to be associated with perched conditions near foundations or in fill under buildings. Localized perched water was occasionally present beneath the fill layer. The detailed boring logs used to develop the cross-section are provided in Appendix A.

2.2 Historical Activities

The Riverdale facility has been used for manufacturing (carriage building, brewery, and a warehouse) since the early 1900s. From 1956 until the late 1970's, the facility formulated various organo-phosphorus based pesticides. The current operations involve blending and packaging of agricultural and turf chemicals. In April 1984, a site study was conducted by the Field Investigation Team (FIT) as part of the National Dioxin Test Strategy Program. This study indicated the presence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and pesticides in the surface soil at the site. Given the results of the FIT study, Riverdale completed an Interim Remedial Measure (IRM) to control exposure to contaminants under an AOC between the USEPA and Riverdale dated September 28, 1984. The IRM required placement of a geotextile fabric over an area of approximately 19,600-square feet along with a barrier layer of 8 to 10 inches of crushed limestone, which is regularly inspected and maintained.

Riverdale entered into a separate AOC on February 27, 1985, to conduct the RI/FS at the site. Fieldwork was conducted by IT between October 1985 and November 1986. The Final RI Report was submitted to the USEPA in April 1988. Riverdale continues to maintain the crushed limestone barrier along with other requirements of the IRM AOC.

A fire occurred at the facility on July 2, 1992, when a lighting strike apparently triggered a fire at the warehouse (Building 4). The warehouse contained various fungicide, herbicide, and insecticide products, including the active ingredients: 2,4, -D ((2,4 Dichlorophenoxy) acetic acid), Dicamba (3,6-Dichloro-2-methoxy benzoic acid), 2,4, -DP (2-(2,4-Dichlorophenoxy) propanoic acid), MCPA ((4 Chloro-2-methylphenoxy) acetic acid), MCPP (mecoprop), and oxidizers. These products were stored in the brick construction warehouse on a concrete slab floor. It was estimated that the fire consumed 85 percent of the contents of the warehouse.

After the fire was extinguished, the fire residue was contained within the shell of the warehouse, secured with plastic sheeting within a cyclone fence, and permitted for proper disposal. Water used to fight the fire was diverted, through emergency excavation procedures, to a low area north of the warehouse and to a drainage pond southeast of the warehouse. The water was sampled and contained 2,4, -D up to 420 ppm; MCPA up to 70 ppm; 2,4, DP up to 17 ppm; MCPP up to 14 ppm; fungicide up to 58 ppm; and dicamba up to 4.1 ppm. With the approval of the USEPA, the Illinois Environmental Protection Agency (IEPA), and the Thorn Creek Basin Sanitary District, the collected water was discharged to the sanitary sewer system for treatment.

In 1996, the Agency for Toxic Substances and Disease Registry (ATSDR) conducted a study of the surrounding residential areas at the request of the USEPA. On July 29, 1996, ATSDR issued a report summarizing soil-sampling activities performed on May 2, 1996. The conclusion of the report stated that the concentrations of base neutral/acid extractables (BN/As) and organochlorine chemicals detected in the surface soil samples from residential properties adjacent to the site, do not pose a public health hazard. The report recommended no further activities as a result of the soil sampling.

The USEPA contacted Riverdale in December 1996 to discuss finalization of the RI Report. The USEPA provided comments to be included prior to approval. Riverdale incorporated the USEPA's comments; and, in addition, revised the RI Report to reflect current site conditions and current guidance. Based on the Public Health Evaluation (PHE) prepared by Riverdale, the complete human exposure pathways are the industrial worker exposure to surface soil and construction worker exposure to surface and subsurface soil.

In 1998, Riverdale conducted additional limited investigations to provide the USEPA with geological data to support the conclusions of the RI Report. This information was presented in letter reports to the USEPA on March 24, 1998, and April 13, 1998, and was not incorporated into the RI Report or FS Work Plan. The supplemental information developed included a geologic characterization of the subsurface soil in the southern portion of the site, which confirms low hydraulic conductivity (10^{-8} cm/s) of underlying soil. At that time, the horizontal extent of the low conductivity clay layer was not defined, however, more recent soil boring and excavation activities at the site visually confirm the presence of the clay across the site.

To meet the obligations of the 1984 Order, Riverdale has completed a Feasibility Study (FS) Report, which was submitted to the USEPA for review and comment in February 2000. USEPA has not approved the FS Report, but has entered into the current AOC with Riverdale.

Section 3
Soil Sampling and Removal Activities

3.1 Description of Phase I Removal Action

The Phase I RA was conducted from July to November 2000. The primary objectives were to protect workers and effectively manage excavated materials associated with required site upgrades and building projects. The secondary objective was to obtain additional information on the remaining areas of the site that were not previously characterized during the RI. Principal components of the Phase I RA were determined based on discussions between Riverdale and the USEPA and described in the approved RA Workplan. The removal activities were centered around either the construction areas (raw materials warehouse, railroad unloading area, liquid storage, Hartwell Building expansion) or the sampling areas (utility area, low lying area, off-site ditch). A summary of the sampling program is provided in Table 3-1, with sampling locations and areas of excavation indicated on Figure 3-1.

The soil sampling and removal action components of this Phase I RA Report include the following:

- Raw Material Warehouse Area – Preliminary soil sampling (geoprobe), soil sampling, confirmatory soil sampling, excavation of contaminated soil, and disposal characterization of excavated soil
- Railroad Unloading Area – Excavation of contaminated soil, confirmatory sampling and disposal characterization of excavated soil
- Liquid Storage Area - Preliminary soil sampling (geoprobe), soil sampling (hand auger and geoprobe), confirmatory soil sampling, excavation of contaminated soil, and disposal characterization of excavated soil
- Utility Area - Soil sampling (geoprobe)
- Low Lying Area - Soil sampling (geoprobe)
- Hartwell Building Expansion – Soil sampling (geoprobe)
- Off-site drainage ditch – Proposed soil sampling

The scope of the Phase I RA data collection activities and detailed testing methods and procedures are discussed in the work plan, FSAP, QAPP, and HSP. Sampling and removal action activities were conducted to be consistent with current OSHA regulations and protocols that have been designed to protect on-site personnel from potential hazards associated with the site activities as described in the HSP.

3.2 Raw Materials Warehouse

The removal action at the raw materials warehouse included soil sampling, excavation of contaminated soil, and characterization/disposal of excavated soil. The sampling program is summarized in Table 3-2, with sampling and excavation locations provided in Figure 3-2. Thirty two samples were collected and analyzed from 21 locations for selected pesticides. The scope of work at the raw materials warehouse area included:

- On June 28, preliminary soil sampling was conducted to determine the extent of impact within the proposed footprint of the raw materials warehouse (nine borings/twelve samples for selected pesticides).
- On August 8, soil sampling was conducted to confirm the location of contaminated soil at soil boring, B4, drilled and sampled during the remedial investigation (four locations/eight samples for selected pesticides).
- On August 24, soil sampling was conducted to define the southern and southwestern extent of excavation (four locations/eight samples for selected pesticides).
- On September 6, confirmatory soil samples were collected from the excavation (four locations/four samples for selected pesticides).

Samples were also collected from the soil stockpiles to characterize soils prior to disposal. The results of the disposal characterization are provided in Appendix B. Waste manifests are being provided under separate cover.

3.2.1 Soil Sampling

Nine soil borings (SL01 through SL09) were drilled (geoprobe) in the raw materials warehouse area to determine the extent of impact on June 28th. Sixteen samples were collected from the nine locations. Due to the thickness of the crushed limestone barrier at the raw materials warehouse (18 inches to 2 feet), poor recovery limited the sample collection at each location. Soil samples were collected as described in Section 4.4 and 4.5, respectively, of the FSAP. These samples were submitted for analysis of pesticide compounds of potential concern (COPCs). The COPCs were selected based on the list of compounds of concern for construction workers identified in the draft Engineering Evaluation/Cost Analysis (EE/CA) prepared by the USEPA.

Additional sampling was conducted on August 8 to confirm the location of contaminated soil at RI sampling location B4. A total of eight samples were collected from the four locations (SL25 - SL28). These samples were submitted to the laboratory for analysis. Initial analysis of these eight samples (and also samples collected from the liquid storage area), indicated several samples with high concentrations which caused the entire batch of samples to be diluted and re-analyzed. Due to scheduling considerations, it was determined to collect additional samples (approximately 5 feet

from the previous sample locations) to better define the area of excavation. On August 24, eight soil samples were collected and analyzed for pesticide COPCs (SL33 - SL36).

3.2.2 Removal Action

Contaminated soils, from the raw materials warehouse area were determined based on the results of the soil sampling (samples SL33 - SL36). An area of 40 feet by 25 feet was identified and excavated to a depth of approximately 5 feet. The excavation generally conformed to the extent defined on the south and southwest as defined by sample locations SL33, SL34, SL35, and SL36. The north wall of the excavation extended to the edge of the existing raw materials warehouse. A foundation to a depth of a minimum of 5 feet bgs was observed. Levels of contamination at locations, SL35 and SL 36, indicated that additional soil may be impacted, therefore the excavation approximately was extended to the east by approximately 5 feet.

3.2.3 Confirmation Sampling

Four confirmation samples (SL56 - SL59) were collected from the bottom and the sides of the excavation, according to sampling methods outlined in Section 2.3 of the FSAP. Sample SL57 was collected from the base of the excavation near the east side, and samples SL56, SL58, and SL59 were collected from the sidewalls at depths of 3.5 to 5 feet bgs. The samples were analyzed for CLP pesticides.

3.2.4 Disposal Characterization

Soil from the excavation was stored and stockpiled on site on an impervious plastic liner. Two composite samples (DSL3 and DSL4) were collected from the excavated soil stockpiles for TCLP characterization on September 6th. Based on the results of the TCLP analysis, which indicated the soil did not exhibit hazardous characteristics, the soil from this excavation was shipped off-site for disposal as a special waste at Laraway Landfill in Illinois. Waste manifests are being provided under separate cover.

As construction began in the raw materials warehouse area additional soils were excavated since they did not meet the geotechnical requirements for support of the building. This soil was also stockpiled and sampled for TCLP characterization. One sample was collected on September 11 (DSL6) and one sample was collected on September 15 (DSL7). The results confirmed previous characterization and the soil from these two stockpiles was shipped off-site for disposal at Laraway Landfill. A total of 1,613.30 tons of soil was removed from this area and properly disposed at Laraway Landfill.

3.3 Railroad Unloading Area

The removal action at the railroad unloading area included excavation of contaminated soils, soil sampling and characterization/disposal of excavated soil. The railroad unloading area was identified as contaminated during the RI; therefore no preliminary sampling was required to determine the extent of impact. The sampling program is summarized in Table 3-3, with sampling and excavation locations provided in Figure 3-3. The scope of work at the railroad unloading area included:

- On August 23, confirmatory soil sampling was conducted at the base of the 20,000-gallon storage basin (three locations/three samples analyzed for selected pesticides).
- On August 28, soil sampling was conducted at the base of the spill containment basin to determine the level of contamination (two locations/two samples analyzed for selected pesticides).
- On September 8, confirmatory soil sampling was conducted at the base of the excavation of the spill containment basin (two locations/two samples analyzed for selected pesticides).

Samples were also collected from the soil stockpiles to characterize soils prior to disposal. The results of the disposal characterization are provided in Appendix B. Waste manifests are being provided under separate cover.

3.3.1 Removal Action

Soil was excavated in the railroad unloading area for the constructing of the 20,000 gallon storage basin and spill containment basin. Based on data obtained during the RI, it was assumed all soil would be excavated and stockpiled for characterization and off-site disposal.

3.3.2 Confirmation Sampling

Construction at the railroad unloading area began on August 21 with the excavation of the cavity for the 20,000-gallon storage basin. This area was 20 feet by 100 feet, excavated to a depth of 7.2 feet. Excavation of was completed on August 24, at which time three confirmation samples (SL37 - SL39) were collected at the base of the excavation and sent for analyses of selected pesticides.

On August 24, excavation of the spill containment basin began. The dimensions of the excavated area was 20 feet by 60 feet to a depth of 5 feet. Two soil samples (SL40 and SL41) were collected at the completion of the excavation on August 28. Sample results indicated that risk exceeded the levels that were determined to be acceptable, therefore it was agreed that an additional 3 feet would be excavated from the spill containment

basin. On September 8, the additional 3 feet were excavated and two confirmation samples (SL60 and SL61) were collected at the base of the excavation (8 feet bgs based on agreement between Riverdale and the USEPA.

3.3.3 Disposal Characterization

Soil from the railroad unloading area was excavated and stockpiled on site on an impervious plastic liner. On August 23 one composite sample (DSL1) was collected from the soil stockpile. A second soil stockpile was created from the additional soil excavated from the spill containment basin from 5 to 8 feet. Based on the results of the TCLP analysis, which indicated the soil did not exhibit hazardous characteristics, the soil from this excavation was shipped off-site for disposal as a special waste at Laraway Landfill in Illinois. Waste manifests are being provided under separate cover. A total of 2,264.29 tons of soil were disposed from this area.

3.4 Liquid Storage Area

The removal action at the liquid storage area included soil sampling, excavation of contaminated soil, and characterization/disposal of excavated soil. The sampling program is summarized in Table 3-4, with sampling and excavation locations provided in Figure 3-4. The scope of work at the liquid storage area included:

- On June 28, preliminary soil sampling was conducted to determine the extent of impact within the footprint of the liquid storage area (former above ground tank farm). Due to problems with access into the bermed area, several samples were collected adjacent to the liquid storage area to confirm results of the RI sampling. The sampling proposed to be conducted inside the liquid storage area was rescheduled when an all-terrain vehicle was available (two borings/four samples for pesticides).
- On July 3, preliminary soil sampling was completed to determine the extent of impact within the footprint of the liquid storage area (nine borings/twelve samples for pesticides).
- On August 8, soil sampling was conducted to define the area of impact at sampling location SL17 (four hand augers/five samples for pesticides).
- On August 18, samples were collected from caissons during construction of the west phase of the liquid storage area. The USEPA agreed these samples did not require analysis.
- On August 31, additional soil sampling was conducted to define the extended area of impact south of sampling location SL17 (used to define the northern extent of excavation) (four borings/eight samples for pesticides).
- On September 26, soil sampling was conducted to from caissons drilled during construction of the above ground pipeline run (piperack) to confirm the extent of impact (eight locations/eight samples).

- On October 20, additional soil sampling was conducted to define the area of impact at sampling location SL17 (used to define the southern extent of excavation) (four borings/four samples).
- On November 2, confirmatory soil samples were collected from the excavation (two locations/two samples).
- On November 7, confirmatory soil samples were collected from the base of the caisson during construction of the east phase of the liquid storage area (two locations/two samples).

Samples were also collected from the soil stockpiles to characterize soils prior to disposal. The results of the disposal characterization are provided in Appendix B. Waste manifests are being provided under separate cover.

3.4.1 Soil Sampling

A total of 40 samples were collected from the liquid storage area in Stage I (west half), Stage II (east half), and the pipeline run according to the methods outlined in Section 2.2 of the FSAP. Preliminary sampling was conducted throughout the liquid storage area on July 3 to determine the extent of impacts. Samples were collected from sample locations SL12 through SL20. These samples were analyzed for pesticide COPCs.

One sampling location, SL17, on the east side of the liquid storage area, exhibited concentrations that exceeded acceptable risk limits. On August 8, six samples (SL20 - SL24) were collected from the east side of the liquid storage area. These samples were submitted to the laboratory for analysis. Initial analysis of these six samples (and also samples collected from the raw materials area) indicated several samples with high concentrations, which caused the entire batch of samples to be diluted and re-analyzed.

Due to scheduling considerations, it was determined to collect additional samples (approximately 5 feet from the previous sample locations) to better define the area of excavation. On August 31, sample locations (SL44 - SL47) were extended approximately 5 to 10 feet beyond previous locations, in order to encompass a larger area. A specific distance from each previous location could not be established due to the interference of existing tanks. The results of samples collected to the north, SL44 and SL47, were below risk levels. The results of analysis for samples, SL45 and SL46, again, indicated concentrations above the risk levels.

The construction schedule again required additional expedited analysis. Samples SL79 through SL79 were collected on October 20. The samples were analyzed for pesticides and herbicides. Results of the analysis indicated samples were below risk levels.

On September 26, samples were collected from the pipeline run to confirm existing levels of contamination. A total of eight samples were collected (SL68 - SL75). Two of the samples (SL68 and SL71) were submitted for dioxin analysis while the remainder were submitted for full CLP analysis.

In addition to the sampling to confirm the level of contamination in the soils in the liquid storage area, USEPA requested the stockpiled excavated soil be analyzed. Samples DSL16 (composite sample) and DSL17 (grab sample) were collected from the stockpiled soils. Sample DSL16 was analyzed for pesticides, herbicides, SVOCs and metals. Sample DSL17 was analyzed for VOCs.

3.4.2 Confirmation Sampling

Confirmation sampling was conducted on the east side of the liquid storage area (SL80 and SL81) on November 2, 2000 and from the caissons (SL82 and SL83) on November 7, 2000. Samples were analyzed for pesticides, herbicides, volatile, semi-volatile organic, and metals.

3.4.3 Removal Action

Based on the results of sampling and construction considerations, a large area (approximately 100 feet by 50 feet) on the east side of the liquid storage area was excavated to a depth of approximately 5 feet bgs. The additional excavation was to accommodate large concrete bases that required removal before the foundation for the liquid storage area was completed.

3.4.4 Disposal Characterization

Soils removed due to construction requirements in Phase I of the liquid storage area were stockpiled and stored on site on a visquin liner. A sample (DSL2) from this stockpile was collected on August 23 and submitted for TCLP characterization. Based on the results of the TCLP analysis, which indicated the soil did not exhibit hazardous characteristics, the soil from this excavation (primarily from the west side of the liquid storage area) was shipped off-site for disposal as a special waste at Laraway Landfill (1,214.97 tons). In November, 3,031 tons of soils (primarily from the east side of the liquid storage area and the Hartwell Building Extension) were shipped off site for disposal as a special waste at Envirotech Landfill. Waste manifests are being provided under separate cover.

Soil removed from the pipeline run was stockpiled and stored on site in two roll offs. Soil that was removed from the first 4 feet of drilling was stored in one roll off while soil from 4 to 8 feet was stored in the second roll off. One sample was collected from each roll off, DSL8 from 1 to 4 feet and DSL9 from 4 to 8 feet. Both samples were submitted for TCLP characterization to confirm soils exhibited characteristics consistent with initial sampling. Sample DSL8 was also submitted for dioxin analysis. All soils excavated during the removal activities were analyzed to confirm constituent characterization. The soil was subsequently shipped off site to Laraway Landfill as a special waste.

3.5 Utility Area

The removal action at the utility area included soil sampling to determine the extent of contaminated soils. The sampling program is summarized in Table 3-5, with sampling and excavation locations provided in Figure 3-5. The scope of work at the utility area includes collection of 12 samples at six locations (SL62 - SL67). These samples were collected and analyzed for CLP pesticides on September 21.

3.6 Low Lying Area

The removal action activities at the low lying area included soil sampling to determine the extent of impact of facility operations. The sampling program is summarized in Table 3-6, with sampling locations provided in Figure 3-6. The scope of work included collection of eight samples at the six sampling locations (SL50 - SL55).

3.7 Hartwell Building Expansion

The removal action at the Hartwell Building Expansion included soil sampling to determine the extent of impact. The sampling program is summarized in Table 3-7, with sampling and building locations provided in Figure 3-7. The scope of work at the Hartwell Building Expansion included collection of five samples at three locations (SL48, SL49, and SL84). The samples were analyzed for pesticides to confirm soils were not impacted.

Section 4
Analytical Results

Soil samples were collected to determine the levels of contaminants in the soil for several reasons including; construction requirements (to protect workers during construction activities), to confirm conditions after the removal action, to confirm existing contamination as defined in the RI and to obtain additional information on the areas of the site that were not previously characterized during the RI. The activities were centered around the construction areas (raw materials warehouse, railroad unloading area, liquid storage, Hartwell Building expansion) or sampling areas (utility area, low lying area, off-site ditch). A summary of the sampling program and sampling locations was provided and described in Section 3. The results of the analysis are described in this section (as organized by construction area or sampling area).

Soil samples collected as confirmation samples, following construction excavation, were evaluated to confirm that the residual concentrations of pesticides in the soils did not pose a risk to construction workers. Due to the tight construction schedule and the extended turnaround time for data generated by the CLP procedures, Riverdale collected screening data on soil samples after initial removal to help guide the extent of excavation. The screening analysis followed methods published in USEPA publication SW846 Method 8081. The results were typically obtained in 3 to 5 days. These results were used to confirm the completion of the excavation based upon the allowable risk levels identified in the AOC. Risk estimates based upon previously approved input parameters and the screening level pesticide concentrations were provided to the USEPA during construction. The information is also provided Appendix C (provided as a separate volume).

For comparison, risk based cleanup levels are compared to soil data collected during the Phase I RA. Risk based remediation goals (excess cancer risk goals calculated as the most restrictive) for on-site construction workers as provided in the draft EE/CA (prepared by the USEPA) for pesticides detected at the site include aldrin (2,000 ug/kg), chlordane (140,000 ug/kg), dieldrin (2,400 ug/kg), heptaclor (5,800 ug/kg), heptachlor epoxide (3,900 ug/kg), and toxaphene (32,200 ug/kg). The AOC identified target concentration for soils containing dioxin (2,3,7,8-TCDD) is 5 ug/kg (2,3,7,8-TCDD - TEQ). These values are referred to in the discussion below. For organic constituents, risk based soil remediation objectives related to industrial and commercial properties were developed in IAC Title 35, Part 742, Tiered Approach to Corrective Action Objectives.

Many of the soil samples collected and analyzed during the Phase I RA were from soils subsequently excavated and disposed off site. Figure 4-1 provides the sampling results for all confirmatory sampling and for areas that were not previously characterized during the RI. The results provided on Figure 4-1 represents the existing levels of contamination at the locations. In addition, an evaluation of data quality was conducted and is provided in Appendix D. Each of the sampling areas is described in the following sections.

4.1 Raw Materials Warehouse

The soil sampling and removal action components at the raw material warehouse area included preliminary soil sampling (geoprobe), soil sampling to determine location of excavation, confirmatory soil sampling, and disposal characterization of excavated soil. The data is summarized in the following tables:

- Table 4-1, Preliminary Sampling Results
- Table 4-2, Pesticide Sampling Results
- Table 4-3, Confirmatory Pesticide Sampling Results

The preliminary sample results are summarized in Table 4-1. The results include soil samples collected during the initial geoprobe sampling of the proposed footprint (SL01 - SL09), and samples collected at the excavation area and screened using SW846 Method 8081 analysis for faster turn-around time (SL33 - SL36 and SL-56 - SL59). The samples were analyzed for the pesticide COPCs. Two of the samples were analyzed also analyzed for 2,3,7,8 TCDD. 2,3,7,8 TCDD was not detected. The results of the analysis confirm the RI data that low levels of pesticides are present within the footprint of the raw materials warehouse and 2,3,7,8 TCDD is not present in this area.

Table 4-2 presents the results of the CLP Pesticide analysis for samples collected at locations SL33 through SL36. The results confirm the elevated levels of several pesticides including aldrin, alpha-chlordane, gamma-chlordane, dieldrin and heptaclor. This is consistent with elevated levels of contaminants detected at RI sampling location B4. Soils characterized by these samples (SL33 through SL36) were excavated during the removal action in preparation for construction of the foundation and floor slab of the raw materials warehouse.

The results of the confirmatory samples are provided in Table 4-3 and depicted on Figure 4-1. Results indicate the levels in the soil at the east sidewall location, SL58, was non-detect, while at west sidewall locations SL59 pesticides were generally detected in the part per billion range. Sample SL56, another sidewall sample collected near the foundation wall indicted slightly higher concentrations, with aldrin (6,200 ug/kg) detected above the risk based criteria. The other pesticides detected were less than risk based values. The level of aldrin detected

(6,200 ug/kg) was qualified to indicate blank contamination. The risk calculation based on the screening data with a concentration of aldrin at 1,100 ug/kg indicated a risk within acceptable ranges. Variations in sample results are discussed in Appendix D, Evaluation of Data Quality. The foundation and base of the raw materials warehouse were completed. The raw materials warehouse is nearing completion and is anticipated to be in use by March 2001.

4.2 Railroad Unloading Area

The soil sampling and removal action components at the railroad unloading area included confirmatory soil sampling and disposal characterization of excavated soil. The railroad unloading area was determined to be contaminated based on the results of the RI, therefore the soil was handled as impacted during the excavation of both the railroad unloading area and the 20,000 gallon storage basin. The data is summarized in the following tables:

- Table 4-4, Pesticide Sampling Results
- Table 4-5, Confirmatory Pesticide Sampling Results (Containment)
- Table 4-6, Confirmatory Pesticide Sampling Results (Storage)

The pesticide sampling results are provided in Table 4-4. Samples SL40 and SL41 were taken at the base of the spill containment basis (5.2 feet bgs) and were intended to provide confirmation that the soils at the base of the excavation did not pose a risk to construction workers. The results of the analysis indicated the level of aldrin at 300,000 ug/kg at location SL41. Based on the elevated level of aldrin at this location, additional excavation was required. USEPA and Riverdale agreed to increase the depth of the excavation to 8 feet bgs and document the level of contamination at depth.

The results of the confirmatory samples are presented in Table 4-5. Samples collected at 8 feet bgs indicate the level of aldrin present at the base of the containment area, SL60 (19,000 ug/kg) and SL61 (5,800 ug/kg) exceeded the risk level (2,000 ug/kg). However, since these constituents are present at depth and the entire area has been reconstructed, there are no current completed exposure pathways. Without a completed exposure pathway there is no actual risk associated with these concentrations.

During the excavation of additional soil, a potential source for the contamination at depth was observed. It appeared that a drain from the facility previously discharged to this area. The piping was exposed at approximately 6 feet bgs when the excavation equipment damaged the piping. The line was traced to a floor drain in the building. The drain was subsequently sealed. Because the piping was also used for roof drainage, it was replaced at the base of the excavation (8 feet bgs) and covered with sand to the required construction depth. The construction of the spill containment basin is complete.

Table 4-6 presents the results of the confirmatory samples collected from the base of the 20,000-gallon storage area. Sample results for SL37, SL38, or SL39 indicate levels of contamination are not detectable for the majority of the compounds analyzed or less that 5 ug/kg. The construction of the 20,000-gallon storage tank is complete.

4.3 Liquid Storage Area

The soil sampling and removal action components at the liquid storage area included preliminary soil sampling (geoprobe); soil sampling to determine location of excavation, confirmatory soil sampling, and disposal characterization of excavated soil. The data is summarized in the following tables:

- Table 4-7, Preliminary Sampling Results
- Table 4-8, Pesticide Sampling Results
- Table 4-9, Pesticide Sampling Results (Pipeline Run Area)
- Table 4-10, Confirmatory Pesticide Sampling Results
- Table 4-11, Confirmatory Herbicide Sampling Results
- Table 4-12, Confirmatory VOC Sampling Results
- Table 4-13, Confirmatory SVOC Sampling Results
- Table 4-14, DSL16 Pesticide Sampling Results
- Table 4-15, DSL16 Herbicide Sampling
- Table 4-16, DSL16 SVOC Sampling Results
- Table 4-17, DSL16 Metals Sampling
- Table 4-18, DSL17 VOC Sampling

The preliminary sample results are summarized in Table 4-7. The results include soils samples collected during the initial geoprobe sampling of the proposed footprint (SL12 - SL20), for the pesticide COPCs. Three of the samples (SL15, SL16 and SL17) were analyzed for 2,3,7,8 TCDD. 2,3,7,8 TCDD was not detected. Additional geoprobe sampling was also conducted northeast of the proposed footprint to confirm results of the RI sampling. The results of the analysis confirm the RI data that low levels of pesticides are present within the footprint of the liquid storage area. Based on the results of the analysis the area surrounding SL17 was impacted at elevated levels and required excavation of soil.

Table 4-8 presents the results of the CLP Pesticide analysis for samples collected at locations SL44 through SL47. The results confirm the elevated levels of several pesticides including aldrin, alpha-chlordane, gamma-chlordane, diedrin and heptaclor. Soils characterized by these

samples (SL44 - SL47) were excavated during the removal action in preparation for construction of the foundation of the liquid storage area. To obtain additional information on the extent of impact at SL17, four additional locations (SL76 - SL79) were sampled (geoprobe). Due to the short turnaround time required to obtain results prior to excavation (which was scheduled for the following week), the samples were analyzed utilizing the SW846 Method 8081. The results of the analysis (provided in Appendix E) indicated levels of pesticides were below risk numbers. Field observations indicated the presence of kerosene (which was historically used as a carrier for some formulations) in the shallow soils in this area. The soils characterized by samples; SL20 through SL24, SL44 through SL47, and SL74 through SL79, were excavated during the installation of the concrete foundation for the liquid storage area.

Table 4-9 presents the results of samples SL68 through SL79 which were collected at the base of the caissons (8 feet bgs) drilled prior to construction of the pipeline run. The results of the analysis indicate the majority of the pesticide compounds analyzed were not detected and when they were present they were at low concentrations. This is consistent with the results of the RI which indicate contamination is generally present above risk levels from the surface to approximately 4 feet bgs. Two samples (SL68 and SL71) were analyzed for 2,3,7,8 (and cogeners). The results are provided in Appendix E. The calculated International Toxicity Equivalence Factor (TEQs) are 7 ng/kg and 0.1 ng/kg, respectively.

Tables 4-10 through 4-13 present the results of the confirmatory sampling for pesticides, herbicides, VOCs and SVOCs, respectively. The results of the analysis indicate that pesticides, herbicides were not detected in the majority of the samples, or if detected were present at low levels. Several VOCs were detected, including xylene and ethylbenzene, but the concentrations detected are below risk based remediation levels (35 IAC Part 742, Appendix F). In addition, soil boring B-5 drilled in this area to evaluate soils prior to construction of the liquid storage tank, indicates clay to a depth of approximately 25 feet bgs.

Tables 4-14 through 4-18 present the results of the characterization of soils which were stockpiled (DSL16 and DSL17) following excavation from the east side of the liquid storage area. The results of the analysis indicate that the soils were impacted by the contaminants of concern.

4.4 Utility Area

The soil sampling at the utility area included soil sampling (geoprobe) to obtain additional information on the areas of the site that were not previously characterized during the RI. The pesticide analysis for the twelve samples (six locations) is summarized in the following table:

- Table 4-19, Pesticide Sampling Results

The results of the analysis presented in Table 4-19 indicates the majority of the pesticide compounds analyzed were not detected and when they were present they were at low concentrations.

4.5 Hartwell Building Expansion

The soil sampling at this area included soil sampling (geoprobe) to obtain additional information on the areas of the site that were not previously characterized during the RI. The pesticide analysis for the five samples (three locations) is summarized in the following table:

- Table 4-20, Pesticide Sampling Results

The results of the analysis presented in Table 4-20 indicates the majority of the compounds were not detected. Although the results of the analysis indicated the concentrations in soils did not exceed risk numbers, this area was excavated to remove an old below ground concrete structure. The area was excavated to approximately to 10 feet bgs. The soil characterized and shipped off site for disposal as a special waste at Envirotech Landfill.

4.6 Low Lying Area

The soil sampling at the low lying area included soil sampling (geoprobe) to obtain additional information on the areas of the site that were not previously characterized during the RI. Eight samples were collected from six locations. Samples were collected at the surface and at depth at two locations. The USEPA RPM and USEPA OSC were present during the sampling and agreed that due the homogenous nature of the soils (primarily clay), samples collected at depth were not required at the other four locations. Figure 4-2 presents the analytical results for the low-lying area. The data is summarized in the following tables:

- Table 4-21, Pesticide Sampling Results
- Table 4-22, Herbicide Sampling Results
- Table 4-23, VOC Sampling Results
- Table 4-24, SVOC Sampling Results
- Table 4-25, Metals Sampling Results
- Table 4-26, Dioxin Sampling Results and TEQ Calculations

Table 4-21 provides the results of the pesticide analysis. The concentration of pesticides detected at location SL50-0.5 indicates concentrations in surface soils for aldrin (15,000 ug/kg), alpha-chlordane (1,900 ug/kg), gamma-chlordane (4,600 ug/kg), and dieldrin (1,900 ug/kg) are elevated. The sample location is approximately 10 feet from the crushed limestone cover at an area where surface water runoff is apparent. The levels of pesticides present are consistent with

an isolated impact from the facility. The concentration at SL50-4, which is the same sample location, collected 4 feet bgs, was 54 ug/kg for aldrin and non-detect for alpha-chlordane, gamma- chlordane, and dieldrin. Aldrin was not detected above the risk based cleanup level (2,000 ug/kg) at any other sampling location. Pesticides were not detected above risk levels at sampling locations SL51, SL52, SL53, SL54, and SL55. This demonstrates the limited surficial impact on the low-lying area from the facility operations.

Dioxin (2,3,7,8 TCDD and its congeners) was analyzed at locations SL53 and SL54. The data is presented in Table 4-26. The calculated TEQs at SL53 was 26.81 ng/kg and at SL54 was 25.5 ng/kg, well below the 5 ug/kg risk level (Appendix E).

The results of the analysis presented in Table 4-22, 4-23 and 4-24 indicates that herbicides, VOCs and SVOCs compounds were not detected at any sampling location.

Table 4-25 presents the results of the metals analysis. Background concentrations of inorganic chemicals in soils for counties with metropolitan statistical areas have been established in the State of Illinois (Appendix F). The levels of metals detected on site are consistent with the established background levels.

Section 5
Certification

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquires of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

Signature and Date:

Rae Mindock
Project Manager

Section 6
References

IT Corporation. 1998. Draft Feasibility Study Workplan. Riverdale Chemical Company. Chicago Heights, Illinois.

IT Corporation. 1998. Hydraulic Conductivity Testing of Soils. Riverdale Chemical Company. Chicago Heights, Illinois. April 1998.

RMT, Inc. 2000. Feasibility Study Report, Riverdale Chemical Company. Chicago Heights, Illinois. February 23, 2000.

USEPA. 1984. Administrative Order of Consent for Immediate Response Measures. September 28, 1984.

USEPA. 1985. Administrative Order of Consent for Remedial Investigation/Feasibility Study. Riverdale Chemical Company. Chicago Heights, Illinois. February 27, 1985.

USEPA. 1996. ATSDR Record of Activity. Riverdale Chemical Company. July 29, 1996.

Table 3-1

Summary of Phase I Removal Action Sampling Program

Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL01 - 4 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL02 - 3 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL02 - 5 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL03 - 4.5 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL04 - 4.5 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL05 - 4.5 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL06 - 3 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL07 - 3 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL07 - 4.5 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL08 - 2.5 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL08 - 4.5 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL09 - 3 FT	Raw Materials Warehouse	06/28/2000	Pesticides COPCs
SL10 - 3 FT	Phase I & II: Liquid Storage Area	06/28/2000	Pesticides COPCs
SL10 - 5 FT	Phase I & II: Liquid Storage Area	06/28/2000	Pesticides COPCs
SL11 - 3 FT	Phase I & II: Liquid Storage Area	06/28/2000	Pesticides COPCs
SL11 - 4.5 FT	Phase I & II: Liquid Storage Area	06/28/2000	Pesticides COPCs
SL12 - 1 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL12 - 3.5 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL13 - 1.5 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL13 - 3.5 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL14 - 3 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL15 - 3 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL16 - 1 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL17 - 1 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL17 - 3 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL18 - 2.5 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL19 - 1 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL20 - 2 FT	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL20 - 2 FT DUP	Phase I & II: Liquid Storage Area	07/03/2000	Pesticides COPCs
SL21 - 1 FT	Phase II: Liquid Storage Area	08/08/2000	Not Analyzed[1]
SL22 - 1 FT	Phase II: Liquid Storage Area	08/08/2000	Not Analyzed[1]
SL22 - 2 FT	Phase II: Liquid Storage Area	08/08/2000	Not Analyzed[1]
SL23 - 1 FT	Phase II: Liquid Storage Area	08/08/2000	Not Analyzed[1]
SL24 - 1 FT	Phase II: Liquid Storage Area	08/08/2000	Not Analyzed[1]
SL24 - 1 FT DUP	Phase II: Liquid Storage Area	08/08/2000	Not Analyzed[1]
SL25 - 2 FT	Raw Materials Warehouse	08/08/2000	Not Analyzed[1]
SL25 - 4 FT	Raw Materials Warehouse	08/08/2000	Not Analyzed[1]
SL26 - 2 FT	Raw Materials Warehouse	08/08/2000	Not Analyzed[1]

Table 3-1
Summary of Phase I Removal Action Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL26 - 4 FT	Raw Materials Warehouse	08/08/2000	Not Analyzed[1]
SL27 - 2 FT	Raw Materials Warehouse	08/08/2000	Not Analyzed[1]
SL27 - 4 FT	Raw Materials Warehouse	08/08/2000	Not Analyzed[1]
SL28 - 2 FT	Raw Materials Warehouse	08/08/2000	Not Analyzed[1]
SL 28 - 4 FT	Raw Materials Warehouse	08/08/2000	Not Analyzed[1]
SL29 - 10 FT	Phase I: Liquid Storage Area	08/18/2000	Not Analyzed[2]
SL30 - 10 FT	Phase I: Liquid Storage Area	08/18/2000	Not Analyzed[2]
SL31 - 10 FT	Phase I: Liquid Storage Area	08/18/2000	Not Analyzed[2]
SL32 - 10 FT	Phase I: Liquid Storage Area	08/18/2000	Not Analyzed[2]
SL33 - 1.2 FT	Raw Materials Warehouse	08/24/2000	SW846 Pesticide COPCs
		08/24/2000	CLP Pesticide
SL33 - 3.5 FT	Raw Materials Warehouse	08/24/2000	SW846 Pesticide COPCs
		08/24/2000	CLP Pesticide
SL34 - 1.2 FT	Raw Materials Warehouse	08/24/2000	SW846 Pesticide COPCs
		08/24/2000	CLP Pesticide
SL34 - 3.5 FT	Raw Materials Warehouse	08/24/2000	SW846 Pesticide COPCs
		08/24/2000	CLP Pesticide
SL35 - 1 FT	Raw Materials Warehouse	08/24/2000	SW846 Pesticide COPCs
		08/24/2000	CLP Pesticide
SL35 - 4.5 FT	Raw Materials Warehouse	08/24/2000	SW846 Pesticide COPCs
		08/24/2000	CLP Pesticide
SL36 - 1.2 FT	Raw Materials Warehouse	08/24/2000	SW846 Pesticide COPCs
		08/24/2000	CLP Pesticide
SL36 - 4.5 FT	Raw Materials Warehouse	08/24/2000	SW846 Pesticide COPCs
		08/24/2000	CLP Pesticide
SL37 - 6.2 FT	Railroad Unloading Storage Basin	08/23/2000	SW846 Pesticide COPCs
		08/23/2000	CLP Pesticide
SL38 - 6.2 FT	Railroad Unloading Storage Basin	08/23/2000	SW846 Pesticide COPCs
		08/23/2000	CLP Pesticide
SL39 - 6.2 FT	Railroad Unloading Storage Basin	08/24/2000	SW846 Pesticide COPCs
		08/24/2000	CLP Pesticide
SL40-5.2FT	Railroad Unloading Spill Containment Basin	08/28/2000	SW846 Pesticide COPCs
		08/28/2000	CLP Pesticide
SL41-5.2FT	Railroad Unloading Spill Containment Basin	08/28/2000	SW846 Pesticide COPCs
		08/28/2000	CLP Pesticide
SL41-5.2FT-DUP	Railroad Unloading Spill Containment Basin	08/28/2000	CLP Pesticide
SL44-1FT	Phase II: Liquid Storage Area	08/31/2000	CLP Pesticide
SL44-4FT	Phase II: Liquid Storage Area	08/31/2000	CLP Pesticide

Table 3-1
Summary of Phase I Removal Action Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL45-1FT	Phase II: Liquid Storage Area	08/31/2000	CLP Pesticide
SL45-4FT	Phase II: Liquid Storage Area	08/31/2000	CLP Pesticide
SL46-1FT	Phase II: Liquid Storage Area	08/31/2000	CLP Pesticide
SL46-4FT	Phase II: Liquid Storage Area	08/31/2000	CLP Pesticide
SL47-1FT	Phase II: Liquid Storage Area	08/31/2000	CLP Pesticide
SL47-4FT	Phase II: Liquid Storage Area	08/31/2000	CLP Pesticide
SL47-DUP	Phase II: Liquid Storage Area	08/31/2000	CLP Pesticide
SL48-1FT	Hartwell Building Expansion	08/31/2000	CLP Pesticide
SL48-4FT	Hartwell Building Expansion	08/31/2000	CLP Pesticide
SL49-1FT	Hartwell Building Expansion	08/31/2000	CLP Pesticide
SL49-4FT	Hartwell Building Expansion	08/31/2000	CLP Pesticide
SL50-6IN (SL50-0.5FT)	Low Lying Area	08/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL50-4FT	Low Lying Area	08/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-6IN (SL51-0.5FT)	Low Lying Area	08/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-4FT	Low Lying Area	08/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-6IN (SL52-0.5FT)	Low Lying Area	08/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-4FT	Low Lying Area	08/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL53-6IN (SL53-0.5FT)	Low Lying Area	08/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		08/31/2000	Dioxin - 8290
SL54-6IN (SL54-0.5FT)	Low Lying Area	08/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		08/31/2000	Dioxin - 8290
SL55-6IN (SL55-0.5FT)	Low Lying Area	08/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL56-5FT	Raw Materials Warehouse	09/06/2000	SW846 Pesticide COPCs
		09/06/2000	CLP Pesticide
SL57-5FT	Raw Materials Warehouse	09/06/2000	SW846 Pesticide COPCs
		09/06/2000	CLP Pesticide
SL58-5FT	Raw Materials Warehouse	09/06/2000	SW846 Pesticide COPCs
		09/06/2000	CLP Pesticide
SL59-5FT	Raw Materials Warehouse	09/06/2000	SW846 Pesticide COPCs
		09/06/2000	CLP Pesticide
SL60-5FT	Railroad Unloading Spill Containment Basin	09/08/2000	CLP Pesticide
SL61-5FT	Railroad Unloading Spill Containment Basin	09/08/2000	CLP Pesticide
SL62-1FT	Utility Area	09/21/2000	CLP Pesticide
SL62-4FT	Utility Area	09/21/2000	CLP Pesticide
SL63-1FT	Utility Area	09/21/2000	CLP Pesticide
SL63-4FT	Utility Area	09/21/2000	CLP Pesticide
SL64-1FT	Utility Area	09/21/2000	CLP Pesticide
SL64-4FT	Utility Area	09/21/2000	CLP Pesticide

Table 3-1
Summary of Phase I Removal Action Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL65-1FT	Utility Area	09/21/2000	CLP Pesticide
SL65-4FT	Utility Area	09/21/2000	CLP Pesticide
SL66-1FT	Utility Area	09/21/2000	CLP Pesticide
SL66-4FT	Utility Area	09/21/2000	CLP Pesticide
SL67-1FT	Utility Area	09/21/2000	CLP Pesticide
SL67-4FT	Utility Area	09/21/2000	CLP Pesticide
SL68-8FT	Pipeline Run	09/26/2000	Dioxin - 8280
SL69-8FT	Pipeline Run	09/26/2000	CLP Pesticide
SL70-8FT	Pipeline Run	09/26/2000	CLP Pesticide
SL71-8FT	Pipeline Run	09/26/2000	Dioxin - 8280
SL72-8FT	Pipeline Run	09/26/2000	CLP Pesticide
SL73-8FT	Pipeline Run	09/26/2000	CLP Pesticide
SL74-8FT	Pipeline Run	09/26/2000	CLP Pesticide
SL75-8FT	Pipeline Run	09/26/2000	CLP Pesticide
SL76-4FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL77-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL78-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL79-2.5FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL80-5FT	Phase II: Liquid Storage Area	11/02/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL81-3.5FT	Phase II: Liquid Storage Area	11/02/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL82-9FT	Phase II: Liquid Storage Area	11/07/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL83-9FT	Phase II: Liquid Storage Area	11/07/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL84-5FT	Hartwell Building Expansion	11/10/2000	CLP Pesticide
SL84-5FT DUP	Hartwell Building Expansion	11/10/2000	CLP Pesticide
DSL1	Railroad Unloading Area	08/23/2000	Full TCLP
DSL2	Phase I: Liquid Storage Area	08/23/2000	Full TCLP
DSL3	Raw Materials Warehouse (Potential)	09/06/2000	Full TCLP
DSL4	Raw Materials Warehouse (Contaminated)	09/06/2000	Full TCLP
DSL5	Railroad Unloading Spill Containment Basin (8 FT)	09/08/2000	Full TCLP
		09/18/2000	Dioxin - 8280
DSL6	Raw Materials Warehouse (Small Pile)	09/11/2000	TCLP Pesticides
DSL7	Raw Materials Warehouse (Under Concrete)	09/15/2000	TCLP Pesticides
DSL8	Pipeline Run (1-4FT)	09/26/2000	TCLP Pesticides

Table 3-1
Summary of Phase I Removal Action Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
		09/26/2000	Dioxin - 8280
DSL9	Pipeline Run (4-8FT)	09/26/2000	TCLP Pesticides
DSL10	Railroad Unloading Trench (1-4FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL11	Railroad Unloading Trench (4-8FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL12	Phase II: Liquid Storage Area (berm)	10/26/2000	TCLP Pesticides/Herbicides
DSL13	Phase II: Liquid Storage Trench (1-4FT)	10/26/2000	TCLP Pesticides/Herbicides
		10/26/2000	Dioxin 8280
DSL14	Phase II: Liquid Storage Trench (4-8FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL15	Railroad Unloading Area	11/03/2000	TCLP Pesticides
DSL16	Phase II: Liquid Storage Area	11/07/2000	TCL SVOC/Pesticide/Herbicide
DSL17	Phase II: Liquid Storage Area	11/07/2000	TCL VOC
DSL18	Phase II: Liquid Storage Area	11/10/2000	BTEX
DSL19	Railroad Unloading Trench (1-4FT)	11/10/2000	BTEX
DSL20	Phase II: Liquid Storage Area	11/10/2000	Full TCLP
DSL21	Phase II: Liquid Storage Area	11/15/2000	EOX
DSL22	Phase II: Liquid Storage Area	11/15/2000	TCLP Pesticides
DSL23	Phase II: Liquid Storage Area	11/29/200	TCLP Pesticides

Notes:

[1] These samples were not analyzed due to problems with laboratory. Additional locations were chosen and samples submitted for analysis.

[2] These samples were not analyzed per discussions with the USEPA.

[4] Several modifications/revisions were made to the table. The changes are indicated by italics.

Table 3-2
Raw Materials Warehouse Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLING EVENT	SAMPLE IDENTIFICATION	COMMENTS
SOIL SAMPLING		
June 28, 2000	SL01-4, SL02-3, SL02-5, SL03-4.5, SL04-4.5, SL05-4.5, SL06-3, SL07-3, SL07-4.5, SL08-2.5, SL08-4.5, SL09-3	Geoprobe sampling (grab samples)
August 8, 2000	SL25-2, SL25-4, SL26-2, SL26-4,SL27-2, SL27-4, SL28-2, SL28-4	Grab samples collected at depth with use of backhoe. Partially used to define area of excavation.
August 24, 2000	SL33-1.2, SL33-3.5, SL34-3.5, SL35-1, SL35-4.5, SL36-1.2, SL36-4.5	Grab samples collected at depth with use of backhoe. Partially used to define area of excavation.
CONFIRMATORY		
September 6, 2000	SL56-5, SL57-5, SL58-5, SL59-5	SL57-5 collected at base of excavation. SL56, SL58, SL59 collected from sidewall at depth of approximately 3.5 to 5 ft bgs.
DISPOSAL CHARACTER		
September 6, 2000	DSL-3, DSL-4 (composite samples)	DSL 3 was collected from "overexcavation." Stockpile: DSL 4 was collected from excavation area bounded by SL33-SL36.
September 11, 2000	DSL 6 (composite sample)	DSL 6 collected from excavated soil from footing excavation.
September 18, 2000	DSL 7 (composite sample)	DSL 7 collected from footings excavation to raw materials concrete pad.

Table 3-3
Railroad Unloading Area Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLING EVENT	SAMPLE IDENTIFICATION	COMMENTS
CONFIRMATORY		
August 23, 2000	SL37-6.2, SL38-6.2, SL39-6.2	Grab samples collected at base of excavation.
August 28, 2000	SL40-5.2, SL41-5.2	Grab samples collected at depth of 5.2 feet bgs.
September 8, 2000	SL60-5, SL61-5	Grab samples collected at depth of 8 feet bgs.
DISPOSAL		
August 23, 2000	DSL1 (composite)	Storage basin
September 8, 2000	DSL5 (composite)	Containment area
October 26, 2000	DSL10, DSL11 (composite)	Trench pipe

Notes:

Railroad unloading was previously characterized to contain soils with risk above acceptable levels. Therefore no horizontal sampling excavation determined on construction requirements.

Table 3-4
Liquid Storage Area Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLING EVENT	SAMPLE IDENTIFICATION	COMMENTS
SOIL SAMPLING		
June 28, 2000	SL10-3, SL10-5, SL11-3, SL11-4.5	Geoprobe sampling (grab samples)
July 3, 2000	SL12-1, SL12-3.5, SL13-1.5, SL13-3.5, SL14-3, SL15-3, SL16-1, SL17-1, SL17-3, SL18-2.5, SL19-1, SL20-2	Geoprobe sampling (grab samples)
August 8, 2000	SL21-1, SL22-1, SL22-2, SL23-1, SL24-1	Hand auger sampling (grab samples)
August 18, 2000	SL29-10, SL30-10, SL31-10, SL32-10	From caissons - not analyzed per USEPA
August 31, 2000	SL44-1, SL44-4, SL45-1, SL45-4, SL46-1, SL46-4, SL47-1, SL47-4	Geoprobe sampling (grab samples)
September 20, 2000	SL76-4, SL77-6, SL78-1.5, SL78-6, SL79-2.5	Geoprobe sampling (grab samples)
CONFIRMATORY		
November 2, 2000	SL80-5, SL81-3.5	Grab samples collected from base of excavation
November 7, 2000	SL82-9, SL83-9	Grab sampled collected from base of caisson
DISPOSAL CHARACTER		
August 23, 2000	DSL2 (composite)	Phase II liquid storage
October 26, 2000	DSL12, DSL13, DSL14 (composite)	Phase II liquid storage
November 3, 2000	DSL15 and DSL16 (composite); DSL17 (grab)	Phase II liquid storage, berm, electrical trench

Table 3-5
Utility Area Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLING EVENT	SAMPLE IDENTIFICATION	COMMENTS
SOIL SAMPLING		
September 21, 2000	SL62-1, SL62-4, SL63-1, SL63-4, SL64-1, SL64-4, SL65-1, SL65-4, SL66-1, SL66-4, SL67-1, SL67-4	Geoprobe sampling (grab samples)

Table 3-6
Low Lying Area Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLING EVENTS	SAMPLE IDENTIFICATION	COMMENTS
SOIL SAMPLING		
August 31, 2000	SL50-6 (in), SL50-4, SL51-6 (in), SL51-4, SL52-6 (in), SL52-4, SL53-6 (in), SL54-6 (in), SL55-6 (in)	Geoprobe sampling (grab samples). Note: Samples designated with "--6" is in inches. Sample nomenclature changed to "0.5" for report.

Table 3-7
Hartwell Building Expansion Sampling Program
Riverdale Chemical Company - Chicago Heights, Illinois

SAMPLING EVENT	SAMPLE IDENTIFICATION	COMMENTS
SOIL SAMPLING		
August 31, 2000	SL48-1, SL48-4, SL49-1, SL49-4	Geoprobe sampling (grab samples)
November 7, 2000	SL84-5	Grab sample collected from base of caisson

Table 4-1
Soil Sampling Results
Raw Materials Warehouse Area
Riverdale Chemical Company
Chicago Heights, Illinois

CHEMICAL NAME	SAMPLE LOCATION													
	SL01-4FT	SL02-3FT	SL02-5FT	SL03-4.5FT	SL04-4.5FT	SL05-4.5FT	SL06-3FT	SL07-3FT	SL07-3FT-DL	SL07-4.5FT	SL08-2.5FT	SL08-2.5FT-DL	SL08-4.5FT	SL09-3FT
PESTICIDES/PCBs														
Aldrin	3.2E-03	7.2E-03	ND	7.2E-03 J	1.9E-03 JP	3.1E-02	ND	4.7E-02	ND	ND	3.1E-01	3.1E-01 D	1.2E-03 JP	1.2E-01
Dieldrin	ND	2.1E-02	3.3E-03 J	4.3E-02	3.4E-03 J	5.9E-02	ND	4.1E-01 C	4.2E-01 DC	ND	3.3E-01 C	3.3E-01 DC	5.3E-03 P	5.8E-01 C
Chlordane	ND	1.5E-02 P	1.5E-03 J	1.9E-02 J	ND	3.4E-02 P	6.0E-03	1.5 PC	1.49 DPC	ND	6.4E-02 P	ND	9.4E-03 J	5.4E-01 PC
Heptachlor	ND	9.8E-03	ND	ND	ND	ND	ND	4.6E-01 C	5.1E-01 DPC	ND	ND	ND	ND	2.3E-01 P
Heptachlor epoxide	ND	1.1E-03 JP	ND	ND	ND	1.4E-03 JP	ND	1.4E-01 P	1.1E-01 DJP	7.4E-03 P	2.4E-02 P	ND	3.6E-03 P	1.2E-01 P
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIOXIN														
2,3,7,8-TCDD	N/A	N/A	N/A	ND	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND

CHEMICAL NAME	SAMPLE LOCATIONS												
	SL09-3FT-DL	*SL33-1.2FT	*SL33-3.5FT	*SL34-1.2FT	*SL34-3.5FT	*SL35-1FT	*SL35-4.5FT	*SL36-1.2FT	*SL36-4.5FT	SL56-5FT	SL57-5FT	SL58-5FT	SL59-2FT
PESTICIDES/PCBs													
Aldrin	1.3E-01 D	7.7E-02	3.8E-01	2.4E+01	ND	1.1E+00	4.4E-01	1.9E+01	5.7E+00	1.1E+00	1.3E-01	5.0E-03	ND
Dieldrin	6.5E-01 DC	ND	1.6E-01	3.3E+01	ND	3.4E+00	5.5E-01	2.5E+01	2.9E+00	5.3E-01	1.2E-01	3.1E-03 PG	1.4E-02
Chlordane	5.9E-01 DPC	ND	6.6E-02	1.6E+02	ND	5.3E-01	1.2E-01	1.3E+02	1.5E+01	5.2E-01	1.5E-02	ND	ND
Heptachlor	2.4E-01 DP	2.4E+01	3.5E-02	2.6E+01	ND	ND	3.8E-02	3.5E+01	5.4E+00	5.0E-02 PG	ND	ND	ND
Heptachlor epoxide	1.2E-01 DP	ND	ND	ND	ND	1.5E-01	ND	ND	ND	1.0E-01 PG	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIOXIN													
2,3,7,8-TCDD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

(1) All Concentrations reported in mg/kg

(2) NA - Not Analyzed

(3) Chlordane is the addition of alpha-chlordane and gamma-chlordane

(4) ND = Not detected below contract required detection limits.

(5) Analytical results based on USEPA SW 846 Method 8081 analytical results.

* Soil excavated during Phase I Removal Action.

Table 4-2
Pesticide Sampling Results - Raw Materials Warehouse Area
Riverdale Chemical Company - Chicago Heights, Illinois

	*SL33-1.2'	*SL33-3.5'	*SL34-1.2'	*SL34-3.5'	*SL35-1'	*SL35-4.5'	*SL36-1.2'	*SL36-4.5'
Heptachlor epoxide	440 C	ND	1,200 Pj	2.1 JPj	92	ND	8,200 PCj	180
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	42,000 BC	380 BC	6,700 BC	ND	410 BC	1,800 BC	55,000 BC	1,900 BC
alpha-BHC	ND	2.7 J	ND	ND	ND	ND	ND	ND
beta-BHC	ND	6.5 PBj	ND	ND	ND	ND	ND	37 JPCj
delta-BHC	ND	9.2	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	700 JBC	5.6 Jbu	1,700 BC	ND	83 B	45 Bu	13,000 BC	340 BC
alpha-Chlordane	850 PBC	4.2 Jbu	25,000 BC	ND	60 PBj	210	68,000 BC	2,200 BC
gamma-Chlordane	4,100 BC	13 Bu	28,000 BC	ND	180 B	320 B	73,000 BC	2,400 BC
Endrin ketone	450 PCj	ND	350 C	ND	54	59	1,100 C	ND
gamma-BHC (Lindane)	450 PCj	3.6 J	170 JPj	ND	15	24	690 JPC	ND
Dieldrin	18,000 C	88	11,000 C	ND	1,400 C	1,700	31,000 C	3,700 C
Endrin	ND	ND	ND	ND	ND	ND	ND	130 Pj
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	540 JBC	ND	1,500 PBCj	ND	35 PB	ND	2,400 PBCj	110 PBj
4,4'-DDE	ND	ND	600 PCj	ND	26	ND	1,300 JPCj	48 JP
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	6,900 BC	ND	18,000 C	ND	32 B	1,200 BC	34,000 BC	1,700 BC
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	210 Pj	ND	ND	ND	1,200 Pxu	ND

Notes:
All concentrations are presented in micrograms per kilogram (µg/kg).
B = Analyte was present in the method blank.
C = The presence of the compound was confirmed by GC/MS analysis.
J = Reported value is less than the reporting limit but greater than the method detection limit.
P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.
j = Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.
u = Analyte value was considered nondetected on the basis of blank contamination (USEPA 1999).
ND = Not Detected.
* = Soil excavated during the Phase I Removal Action

Table 4-3
Confirmatory Pesticide Sampling Results - Raw Materials Warehouse Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL56-5'	SL57-5'	SL58-5'	SL59-2'
Heptachlor epoxide	200	7.2 JPj	ND	4.2 Pj
Endosulfan sulfate	ND	ND	ND	ND
Aldrin	6,200 BC	53	ND	1.6 JPj
alpha-BHC	ND	5.6 Pj	ND	ND
beta-BHC	ND	ND	ND	ND
delta-BHC	210 Pj	28 Pj	ND	ND
Endosulfan II	ND	6.6 JPj	ND	ND
4,4'-DDT	160 J	12 J	ND	ND
alpha-Chlordane	640 PCj	16 Pj	ND	2.0 JPj
gamma-Chlordane	1,800 Cj	73	ND	3.5 Pj
Endrin ketone	ND	7.1 JP	ND	ND
gamma-BHC(Lindane)	64 Jj	19 P	ND	ND
Dieldrin	1,600 Cj	160	ND	46
Endrin	ND j	ND	ND	ND
Methoxychlor	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND
4,4'-DDE	ND	7.2 JPj	ND	ND
Endrin aldehyde	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples collected on September 6, 2000.

B = Analyte was present in the method blank.

C = The presence of the compound was confirmed by GC/MS analysis.

J = Reported value is less than the reporting limit but greater than the method detection limit.

P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND = Not Detected

Table 4-4
Pesticide Sampling Results - Railroad Unloading Area
Riverdale Chemical Company - Chicago Heights, Illinois

	*SL40-5.2'	*SL41-5.2'
Heptachlor epoxide	ND	ND
Endosulfan sulfate	ND	ND
Aldrin	9,800 BC	300,000 j
alpha-BHC	42	ND
beta-BHC	28 JPj	ND
delta-BHC	ND	ND
Endosulfan II	ND	ND
4,4'-DDT	970	18,000
alpha-Chlordane	200 Pj	4,400
gamma-Chlordane	610	15,000
Aroclor-1242	ND	ND
Endrin ketone	ND	ND
gamma-BHC(Lindane)	110	ND j
Dieldrin	44 J	1,800 j
Endrin	ND	ND j
Methoxychlor	ND	ND
4,4'-DDD	140	9,100
4,4'-DDE	ND	ND
Endrin aldehyde	ND	ND
Heptachlor	170	22,000
Toxaphene	ND	ND
Endosulfan I	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

B = Analyte was present in the method blank.

C = The presence of the compound was confirmed by GC/MS analysis.

J = Reported value is less than the reporting limit but greater than the method detection limit.

P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND = Not Detected.

* = Soil excavated during the Phase I Removal Action

Table 4-5
Confirmatory Pesticide Sampling Results - Railroad Unloading Area (Containment)
Riverdale Chemical Company - Chicago Heights, Illinois

	SL60-8'	SL61-8'
Heptachlor epoxide	ND	ND
Endosulfan sulfate	ND	ND
Aldrin	19,000	5,800 C
alpha-BHC	ND	ND
beta-BHC	ND	ND
delta-BHC	ND	ND
Endosulfan II	ND	ND
4,4'-DDT	1,100 C	340 C
alpha-Chlordane	ND	1.2 JPj
gamma-Chlordane	ND	94 J
Endrin ketone	ND	ND
gamma-BHC(Lindane)	ND	ND
Dieldrin	ND	160 J
Endrin	ND	ND
Methoxychlor	ND	ND
4,4'-DDD	590 C	130 J
4,4'-DDE	ND	ND
Endrin aldehyde	ND	ND
Heptachlor	ND	ND
Toxaphene	ND	ND
Endosulfan I	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples collected on September 8, 2000.

C = The presence of the compound was confirmed by GC/MS analysis.

J = Reported value is less than the reporting limit but greater than the method detection limit.

P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND = Not detected.

Table 4-6
Confirmatory Pesticide Sampling Results - Railroad Unloading Area (Storage)
Riverdale Chemical Company - Chicago Heights, Illinois

	SL37-6.2'	SL38-6.2'	SL39-6.2'
Heptachlor epoxide	ND	ND	ND
Endosulfan sulfate	ND	ND	ND
Aldrin	5.2 Bu	1.7 JPBu	1.7 JBu
alpha-BHC	ND	ND	ND
beta-BHC	ND	ND	ND
delta-BHC	ND	ND	ND
Endosulfan II	ND	ND	ND
4,4'-DDT	ND	ND	ND
alpha-Chlordane	3 Bu	ND	ND
gamma-Chlordane	3.1 Bu	ND	ND
Endrin ketone	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND
Dieldrin	ND	ND	ND
Endrin	ND	ND	ND
Methoxychlor	ND	ND	ND
4,4'-DDD	ND	ND	ND
4,4'-DDE	ND	ND	ND
Endrin aldehyde	ND	ND	ND
Heptachlor	ND	ND	ND
Toxaphene	ND	ND	ND
Endosulfan I	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples collected on August 23 and 24, 2000.

B = Analyte was present in the method blank.

J = Reported value is less than the reporting limit but greater than the method detection limit.

P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.

u = Analyte value was considered nondetected on the basis of blank contamination (USEPA 1999)

ND = Not Detected

Table 4-7
Soil Sampling Results
Liquid Storage Building
Riverdale Chemical Company
Chicago Heights, Illinois

CHEMICAL NAME	SAMPLE LOCATION														
	SL10-3.0FT	SL10-5.0FT	SL11-3FT	SL11-4.5FT	SL12-1FT	SL12-3.5FT	SL13-1.5FT	SL13-3.5FT	SL14-3FT	SL15-3FT	SL16-1FT	SL16-1FT-RE1	*SL17-1.0FT	*SL17-1.0FT-RE1	*SL17-3FT
PESTICIDES/PCBs															
Aldrin	5.5E-03 P	3.3E-03	ND	ND	2.9E-02	1.7E-03 J	5.3E-02	2.8E-03	ND	4.8E-02	6.1E-02 PJ	ND	1.5E+01 EC	1.9E+01 C	8.3E+00 PEC
Dieldrin	5.2E-02	3.7E-02	ND	ND	2.0E-02	ND	3.6E-02	3.8E-03 J	ND	ND	1.3E+00 P	ND	ND	ND	1.4E-01 J
Chlordane	2.4E-02 P	2.4E-02 P	ND	ND	5.4E-02 P	1.3E-03 J	2.4E-02	2.8E-03	1.2E-03 PJ	ND	1.1E+00 P	6.3E-01 PJ	1.1E-01 J	ND	5.8E-02 J
Heptachlor	8.3E-03 P	6.5E-03 P	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	3.0E-03 P	2.2E-02 P	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIOXIN															
2,3,7,8-TCDD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A	ND	N/A	N/A

CHEMICAL NAME	SAMPLE LOCATIONS													
	*SL17-3FT-RE1	SL18-2.5FT	SL19-1FT	*SL20-2FT	*SL20-2FT-DUP	*SL44-1FT-DL	*SL44-4FT	*SL45-1FT-DL	*SL45-4FT-DL	*SL46-1FT-DL	*SL46-4FT	*SL47-1FT-DL	*SL47-4FT	*SL47-4FT-DUP
PESTICIDES/PCBs														
Aldrin	1.8E+01 C	7.6E-03	2.2E-03	2.7E-03 P	3.3E-03	1.5E+00	3.7E-01	1.7E+01 D	2.9E+01 DC	1.6E+01 DC	8.7E-02	1.0 DC	5.6E-02	1.2E-02
Dieldrin	ND	2.6E-02	9.1E-03	9.7E-03 P	1.1E-02 P	5.5E-01 D	1.1E-02	ND	ND	ND	ND	2.4E-01 D	ND	4.8E-03 J
Chlordane	ND	1.4E-02	9.1E-03 P	3.3E-03 P	ND	ND	3.8E-03 JP	ND	ND	ND	ND	8.7E-02 DJ	ND	5.2E-03 JP
Heptachlor	ND	ND	1.3E-03 PJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.6E-03 J
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIOXIN														
2,3,7,8-TCDD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes
(1) All Concentrations reported in mg/kg
(2) NA - Not Analyzed
(3) Chlordane is the additional of alpha chlordane and gamma chlordane.
(4) ND = Not detected below contract required detection limits.
(5) Analytical results based on USEPA SW 846 Method 8081 analytical results
* Soil excavated during Phase I Removal Action

Table 4-8

Pesticide Sampling Results - Liquid Storage Area

Riverdale Chemical Company - Chicago Heights, Illinois

	*SL44-1'	*SL44-4'	*SL45-1'	*SL45-4'	*SL46-1'	*SL46-4'	*SL47-DUP	*SL47-1'	*SL47-4'
Heptachlor epoxide	48	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	1,500	370	20,000	6,200 C	16,000 C	87	12	850 C	56 j
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	12	ND
beta-BHC	ND	4.4	ND	ND	ND	ND	3.9 JPj	7.2 JPj	1.2 JPj
delta-BHC	ND	1.7 JPj	ND	ND	ND	ND	2.3 JPj	12	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	72	2.0	ND	ND	ND	ND	4.1 J	45	ND
gamma-Chlordane	420	1.8 JPj	ND	ND	ND	ND	3.1 JPj	77	2 J
Endrin ketone	ND	ND	ND	ND	ND	ND	8.3 J	ND	ND
gamma-BHC(Lindane)	36 JPj	ND	ND	ND	ND	ND	2.6 J	7 JPj	ND
Dieldrin	1,100	11	620 JPCj	ND	ND	ND	4.8 J	200	2.2 JPj
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	260	4.6 Pj	ND	ND	ND	ND	55	51 P	ND
4,4'-DDE	51 J	ND	ND	ND	ND	ND	17	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND	ND	ND	3.6 J	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	5.8	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

B = Analyte was present in the method blank.

C = The presence of the compound was confirmed by GC/MS analysis.

J = Reported value is less than the reporting limit but greater than the method detection limit.

P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND = Not Detected.

* = Soil excavated during the Phase I Removal Action

Table 4-9
Pesticides Sampling Results - Pipeline Run Area (Pipe Rack)
Riverdale Chemical Company - Chicago Heights, Illinois

	SL69-8'	SL70-8'	SL72-8'	SL73-8'	SL74-8'	SL75-8'
Heptachlor epoxide	ND	ND	1.5 JPj	1.0 JP	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND
Aldrin	28	110	37	8.9	90	7.1
alpha-BHC	ND	ND	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	2.9 Pj	ND	ND	ND	ND
4,4'-DDT	28	ND	ND	ND	ND	ND
alpha-Chlordane	3.7 Pj	6.6 P	5.9 Pj	5.4 Pj	9.0 Pj	ND
gamma-Chlordane	8.4	14	12	11	16	1.3 J
Endrin ketone	2.6 JPj	ND	ND	ND	ND	ND
gamma-BHC(Lindane)	11	ND	ND	ND	ND	ND
Dieldrin	32	26	26 Pj	12 Pj	27 Pj	3.9 J
Endrin	25	ND	ND	ND	3.0 JPj	ND
Methoxychlor	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	4.5 Pj	ND	ND	ND
4,4'-DDE	ND	ND	ND	3.3 J	ND	ND
Endrin aldehyde	ND	44 Pj	470 Pncu	5.1 Pj	200 Pj	6.5 Pj
Heptachlor	17	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples collected on September 26, 2000.

J = Reported value is less than the reporting limit but greater than the method detection limit.

P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

nc = The compound was not confirmed by GC/MS analysis.

u = Analyte value was considered nondetected on the basis of blank contamination (USEPA 1999).

ND = Not Detected

Table 4-10
Confirmatory Pesticides Sampling Results - Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL80-5'	SL81-3.5'	SL82-9'	SL83-9'
Heptachlor epoxide	ND	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND
Aroclor-1260	ND	ND	ND	ND
Aroclor-1254	ND	ND	ND	ND
Aroclor-1221	ND	ND	ND	ND
Aroclor-1232	ND	ND	ND	ND
Aroclor-1248	ND	ND	ND	ND
Aroclor-1016	ND	ND	ND	ND
Aldrin	47 Bu	330 B	1.9 J	4.4
alpha-BHC	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	15 Pj
4,4'-DDT	ND	ND	ND	3.8 JP
alpha-Chlordane	ND	1.7 J	ND	1.4 JPj
gamma-Chlordane	ND	3.0	ND	3.0 Pj
Aroclor-1242	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	1.1 J	ND	ND
Dieldrin	ND	8.7	ND	3.8 JPj
Endrin	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	1.5 JPj
Heptachlor	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples SL80-5' and SL81-3.5' were collected on November 2, 2000 and soil samples SL82-9' and SL83-9' were collected on November 7, 2000.

B = Analyte was present in the method blank.

J = Reported value is less than the reporting limit but greater than the method detection limit.

P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

u = Analyte value was considered nondetected on the basis of blank contamination (USEPA 1999)

ND = Not Detected

Table 4-11
Confirmatory Herbicides Sampling Results - Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL80-5'	SL81-3.5'	SL82-9'	SL83-9'
2,4,5-TP (Silvex)	ND	ND	ND	ND
2,4,5-T	ND	ND	ND	ND
2,4-D	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples SL80-5' and SL81-3.5' were collected on November 2, 2000 and soil samples SL82-9' and SL83-9' were collected on November 7, 2000.

ND = Not Detected.

Table 4-12
Confirmatory VOC Sampling Results - Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL80-5'	SL81-3.5'	SL82-9'	SL83-9'
1,1,1-Trichloroethane	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND
1,2-Dichloroethene (total)	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND
2-Butanone	ND	ND	3.0 J	ND
2-Hexanone	ND	ND	ND	ND
4-Methyl-2-pentanone	ND	ND	ND	ND
Acetone	2,000 Bu	6,400 JBu	15 Bu	2,000 Bu
Benzene	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND
Carbon disulfide	ND	ND	ND	ND
Carbon tetrachloride	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND
Ethylbenzene	11,000	19,000	7.2 J	1,800
Methylene chloride	ND	ND	ND	ND
Styrene	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND
Toluene	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND
Xylenes (total)	49,000	95,000	29	7,600

Notes:

All concentrations are presented in micrograms per kilogram (μg/kg).

Soil samples SL80-5' and SL81-3.5' were collected on November 2, 2000 and
soil samples SL82-9' and SL83-9' were collected on November 7, 2000.

B = Analyte was present in the method blank.

J = Reported value is less than the reporting limit but greater than the method detection limit.

u = Analyte value was considered nondetected on the basis of blank contamination (USEPA 1999).

ND = Not Detected

Table 4-13
Confirmatory SVOC Sampling Results - Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL80-5'	SL81-3.5'	SL82-9'	SL83-9'
1,2,4-Trichlorobenzene	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND
2,4,5-Trichlorophenol	ND	ND	ND	ND
2,4,6-Trichlorophenol	ND	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND
2-Methylnaphthalene	28,000 j	4,500 j	1,200 j	310 Jj
2-Methylphenol	ND	ND	ND	ND
2-Nitroaniline	ND	ND	ND	ND
2-Nitrophenol	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND
4-Bromophenyl phenyl ether	ND	ND	ND	ND
4-Chloro-3-methylphenol	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	ND	ND	ND	ND
4-Methylphenol	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND
4-Nitrophenol	ND	ND	ND	ND
Acenaphthene	430 j	110 j	54 j	ND
Acenaphthylene	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND

Table 4-13
Confirmatory SVOC Sampling Results - Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL80-5'	SL81-3.5'	SL82-9.0'	SL83-9.0'
Benzo(a)pyrene	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND
Benzo(ghi)perylene	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	ND	ND	ND	ND
bis(2-Chloroethyl) ether	ND	ND	ND	ND
bis(2-Ethylhexyl) phthalate	ND	ND	ND	ND
Butyl benzyl phthalate	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND
Di-n-butyl phthalate	ND	ND	ND	ND
Di-n-octyl phthalate	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND
Diethyl phthalate	ND	ND	ND	ND
Dimethyl phthalate	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND
Fluorene	660 Jj	160 Jj	43 Jj	ND
Hexachlorobenzene	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND
N-Nitrosodi-n-propylamine	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND
Naphthalene	8,500 Jj	680 Jj	320 Jj	220 Jj
Nitrobenzene	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND
Phenol	ND	ND	ND	ND
Pyrene	ND	ND	ND	57 Jj

Notes:
All concentrations are presented in micrograms per kilogram (µg/kg).
Soil samples SL80-5' and SL81-3.5' were collected on November 2, 2000 and
soil samples SL82-9' and SL83-9' were collected on November 7, 2000.
J = Reported value is less than the reporting limit but greater than the method detection limit.
j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.
ND = Not Detected.

Table 4-14

DSL16 Pesticide Sampling Results - Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	DSL-16
Heptachlor epoxide	32
Endosulfan sulfate	ND
Aroclor-1260	ND
Aroclor-1254	ND
Aroclor-1221	ND
Aroclor-1232	ND
Aroclor-1248	ND
Aroclor-1016	ND
Aldrin	2,900
alpha-BHC	ND
beta-BHC	7.5
delta-BHC	ND
Endosulfan II	70
4,4'-DDT	380
alpha-Chlordane	180
gamma-Chlordane	620
Aroclor-1242	ND
Endrin ketone	71
gamma-BHC(Lindane)	22
Dieldrin	1,200
Endrin	180
Methoxychlor	ND
4,4'-DDD	ND
4,4'-DDE	26
Endrin aldehyde	ND
Heptachlor	650
Toxaphene	ND
Endosulfan I	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

ND = Not Detected.

Table 4-15
DSL16 Herbicides Sampling Results - Liquid Stroage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	DSL-16
2,4,5-TP (Silvex)	ND
2,4,5-T	ND
2,4-D	29,000

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

ND = Not Detected.

Table 4-16
DSL16 SVOC Sampling Results - Liquid Stroage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	DSL16
1,2,4-Trichlorobenzene	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
2,2'-Oxybis(1-Chloropropane)	ND
2,4,5-Trichlorophenol	ND
2,4,6-Trichlorophenol	ND
2,4-Dichlorophenol	610 J
2,4-Dimethylphenol	ND
2,4-Dinitrophenol	ND
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
2-Chloronaphthalene	ND
2-Chlorophenol	ND
2-Methylnaphthalene	20,000
2-Methylphenol	ND
2-Nitroaniline	ND
2-Nitrophenol	ND
3,3'-Dichlorobenzidine	ND
3-Nitroaniline	ND
4,6-Dinitro-2-methylphenol	ND
4-Bromophenyl phenyl ether	ND
4-Chloro-3-methylphenol	ND
4-Chloroaniline	ND
4-Chlorophenyl phenyl ether	ND
4-Methylphenol	ND
4-Nitroaniline	ND
4-Nitrophenol	ND
Acenaphthene	1,100 J
Acenaphthylene	ND
Anthracene	ND
Benzo(a)anthracene	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

J = Reported value is less than the reporting limit but greater than the method detection limit.

ND = Not Detected.

Table 4-16

TCLP16 SVOC Sampling Results - Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	DSL16
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(ghi)perylene	ND
Benzo(k)fluoranthene	ND
bis(2-Chloroethoxy)methane	ND
bis(2-Chloroethyl) ether	ND
bis(2-Ethylhexyl) phthalate	ND
Butyl benzyl phthalate	ND
Carbazole	ND
Chrysene	ND
Di-n-butyl phthalate	ND
Di-n-octyl phthalate	ND
Dibenz(a,h)anthracene	ND
Dibenzofuran	ND
Diethyl phthalate	ND
Dimethyl phthalate	ND
Fluoranthene	ND
Fluorene	1,600 J
Hexachlorobenzene	ND
Hexachlorobutadiene	ND
Hexachlorocyclopentadiene	ND
Hexachloroethane	ND
Indeno(1,2,3-cd)pyrene	ND
Isophorone	ND
N-Nitrosodi-n-propylamine	ND
N-Nitrosodiphenylamine	ND
Naphthalene	5,700
Nitrobenzene	ND
Pentachlorophenol	ND
Phenanthrene	940 J
Phenol	ND
Pyrene	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg)

J = Reported value is less than the reporting limit but greater than the method detection limit.

ND = Not Detected.

Table 4-17
DSL16 Metal Sampling Results - Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	DSL16
Aluminum	9,990
Antimony	3.8 BN
Arsenic	12.9
Barium	91.8
Beryllium	0.48 B
Cadmium	1.8
Calcium	19,900 j
Chromium	20.1
Cobalt	11.5 B
Copper	39.1
Iron	73,500
Lead	118 j
Magnesium	9,260 j
Manganese	832
Mercury	0.053 B
Nickel	23.7
Potassium	1,150 B
Selenium	ND
Silver	ND
Sodium	ND
Thallium	ND
Vanadium	25.8
Zinc	149

Notes:

All concentrations are presented in milligrams per kilogram (mg/kg).

B = Analyte was present in the method blank.

N = Spiked sample recovery exceeded the control limit.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentratior
appropriate when the difference between the two GC columns was greater than 30 p
j-qualifier suggests uncertainty in the sample results.

ND = Not Detected.

Table 4-18
DSL17 VOC Sampling Results - Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

	DSL17
1,1,1-Trichloroethane	ND
1,1,2,2-Tetrachloroethane	ND
1,1,2-Trichloroethane	ND
1,1-Dichloroethane	ND
1,1-Dichloroethene	ND
1,2-Dichloroethane	ND
1,2-Dichloroethene (total)	ND
1,2-Dichloropropane	ND
2-Butanone	ND
2-Hexanone	ND
4-Methyl-2-pentanone	ND
Acetone	5,300 JB
Benzene	ND
Bromodichloromethane	ND
Bromoform	ND
Bromomethane	ND
Carbon disulfide	ND
Carbon tetrachloride	ND
Chlorobenzene	ND
Chloroethane	ND
Chloroform	ND
Chloromethane	ND
cis-1,3-Dichloropropene	ND
Dibromochloromethane	ND
Ethylbenzene	35,000
Methylene chloride	ND
Styrene	ND
Tetrachloroethene	ND
Toluene	ND
trans-1,3-Dichloropropene	ND
Trichloroethene	ND
Vinyl chloride	ND
Xylenes (total)	200,000

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

B = Analyte was present in the method blank.

J = Reported value is less than the reporting limit but greater than the method detection limi

ND = Not Detected.

Table 4-19
Pesticides Sampling Results - Utility Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL62-1'	SL62-4'	SL63-1'	SL63-4'	SL64-1'	SL64-4'	SL65-1'	SL65-4'
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	1.2 JP	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	ND	ND	ND	ND	ND	ND	ND	ND
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	ND	ND	ND	ND	ND	ND	1.5 JPj	ND
gamma-Chlordane	1.4 J	ND	ND	ND	2.5	5.0	6.0	1.8 J
Endrin ketone	ND	ND	ND	ND	ND	ND	ND	ND
gamma-BHC(Lindane)	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	ND	ND	3.9 J	1.9 J
Endrin	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	2.6	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples collected on September 21, 2000.

J = Reported value is less than the reporting limit but greater than the method detection limit.

P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND = Not detected.

Table 4-19
Pesticides Sampling Results - Utility Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL66-1'	SL66-4'	SL66-4'DUP	SL67-1'	SL67-4'
Heptachlor epoxide	ND	ND	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND
Aldrin	ND	ND	ND	ND	ND
alpha-BHC	ND	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND
alpha-Chlordane	ND	ND	ND	ND	ND
gamma-Chlordane	5.2	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	ND
gamma-BHC(Lindane)	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND

Notes:
All concentrations are presented in micrograms per kilogram (µg/kg).
Soil samples collected on September 21, 2000.
J = Reported value is less than the reporting limit but greater than the method detection limit.
P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.
j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.
ND = Not detected.

Table 4-20

Pesticides Sampling Results - Hartwell Building Expansion Area

Riverdale Chemical Company - Chicago Heights, Illinois

	*SL48-1'	*SL48-1'RE	*SL48-4'	*SL49-1'	*SL49-4'	*SL84-5'	*SL84-5'DUP
Heptachlor epoxide	ND	ND	ND	1.5 JPj	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND
Aldrin	2.4 Pj	ND	2.6	6.7	24	1.6 JPj	39
alpha-BHC	ND	ND	ND	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND	1.9 JP	ND	ND
delta-BHC	ND	20 Pj	ND	ND	1.6 JPj	ND	ND
Endosulfan II	ND	33 Bu	ND	ND	ND	ND	ND
4,4'-DDT	ND	7.4 Pj	ND	ND	ND	ND	ND
alpha-Chlordane	ND	ND	2.6 Pj	4.9	3.1 P	ND	6.0 Pj
gamma-Chlordane	75	91	3.0 Pj	7.1 Pj	1.1 J	0.54	13
Endrin ketone	11	21 Pj	ND	ND	ND	ND	ND
gamma-BHC(Lindane)	ND	ND	ND	1.5 JPj	ND	ND	ND
Dieldrin	ND	ND	ND	2.4 J	ND	ND	7.3
Endrin	ND	7.2 Pj	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	3.6 JPj	ND	ND	ND	ND	ND	ND
Endrin aldehyde	8.4	ND	ND	ND	ND	ND	ND
Heptachlor	ND	16 Pj	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	2.0 J	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples collected on August 31, 2000 with the exception of SL84-5' which was collected on November 10, 2000.

B = Analyte was present in the method blank.

J = Reported value is less than the reporting limit but greater than the method detection limit.

P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

u = Analyte value was considered nondetected on the basis of blank contamination (USEPA 1999)

ND = Not Detected.

* = Soil excavated during the Phase I Removal Action

Table 4-21
Pesticides Sampling Results - Low Lying Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL50-0.5'	SL50-4'	SL51-0.5'	SL51-4'	SL52-0.5'	SL52-4'	SL53-0.5'	SL54-0.5'	SL55-0.5'
Heptachlor epoxide	120 JP	ND	ND	1.2 JPj	5.2 Pj	ND	27 Pj	15 Pj	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1221	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1232	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1016	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	15,000 C	54	210	6.8	170	ND	160	82	ND
alpha-BHC	160	ND	81 Pj	ND	ND	ND	1.3 JPj	ND	ND
beta-BHC	ND	ND	6.1 Jj	ND	ND	ND	10	10 J	ND
delta-BHC	ND	ND	21 Pj	ND	ND	ND	ND	20	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	1,800	ND	73	4 J	300	ND	41	48	54 J
alpha-Chlordane	1,900 PC	ND	420 PCj	17	67 Pj	ND	97	210 Pj	ND
gamma-Chlordane	4,600 C	ND	1,000	10 Pj	160	ND	200	450 Cj	42
Aroclor-1242	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	4.7 Pj	ND	5.8 Pj	ND	ND
gamma-BHC(Lindane)	ND	ND	24	ND	1.9 JPj	ND	1.2 JPj	ND	2,900 C
Dieldrin	1,900	ND	220	12	160	ND	300	110	54 J
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	3,200	ND	330 C	4.2 J	42	ND	90	130	ND
4,4'-DDE	420	ND	110 P	ND	14	ND	78	33 Pj	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	970	ND	76	6.4 Pj	84	ND	19	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	20	ND	ND	ND	4.2 Pj	9 j	ND

Notes:
All concentrations are presented in micrograms per kilogram (µg/kg).
Soil samples collected on August 31, 2000.
C = The presence of the compound was confirmed by GC/MS analysis.
J = Reported value is less than the reporting limit but greater than the method detection limit.
P = The difference for detected pesticide result between the two GC columns is greater than 25 percent.
j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.
ND = Not Detected

Table 4-22
Results of Herbicides Sampling - Low Lying Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL50-0.5'	SL50-4'	SL51-4'	SL52-0.5'	SL52-4'	SL53-0.5'	SL54-0.5'	SL55-0.5'
2,4,5-TP (Silvex)	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-T	40	ND	ND	ND	ND	ND	ND	ND
2,4-D	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples were collected on August 31, 2000

ND = Not Detected.

Table 4-23
VOC Sampling Results - Low Lying Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL50-0.5'	SL50-4'	SL51-0.5'	SL51-4'	SL52-0.5'	SL52-4'	SL53-0.5'	SL54-0.5'	SL55-0.5'
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	8.0 J	3.8 J	7.8 J	4.1 J	5.8 J	8.7 J	ND	ND
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	5.0 JB bsu	27 B bsu	15 JB bsu	38 B bsu	22 B bsu	37 B bsu	32 B bsu	2.8 JB bsu	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND	2.8 J	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	1.3 JB bsu	2.1 JB bsu	ND	1.5 JB bsu	ND	1.8 JB bsu	6.0 JB bsu	1.4 JB bsu	ND
None	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	2.8 J	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (μg/kg).

Soil samples collected on August 31, 2000.

B = Analyte was present in the method blank.

J = Reported value is less than the reporting limit but greater than the method detection limit.

b = Analyte was present in the trip/atmospheric blank.

s = Analyte was present in the hold/storage blank.

u = Analyte value was considered nondetected on the basis of blank contamination (USEPA 1999)

ND = Not Detected

Table 4-24
SVOC Sampling Results - Low Lying Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL50-0.5'	SL50-4'	SL51-0.5'	SL51-4'	SL52-0.5'	SL52-4'	SL53-0.5'	SL54-0.5'	SL55-0.5'
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	100 J	120 J	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
All concentrations are presented in micrograms per kilogram (µg/kg)
Soil samples collected on August 31, 2000.
A = Aldol condensation product.
J = Reported value is less than the reporting limit but greater than the method detection limit.
N = Indicates presumptive evidence of a tentatively identified compound.
p = Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, p-qualifier suggests uncertainty in the sample results.
ND = Not Detected.

Table 4-24

SVOC Sampling Results - Low Lying Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL50-0.5'	SL50-4'	SL51-0.5'	SL51-4'	SL52-0.5'	SL52-4'	SL53-0.5'	SL54-0.5'	SL55-0.5'
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	42 J	ND	170 J j	ND	ND	ND	70 J j	ND	ND
Benzo(a)anthracene	230 J	ND	1,100 j	ND	180 J j	ND	450 J j	74 J	50 J
Benzo(a)pyrene	53 J	ND	ND	ND	ND	ND	79 J j	ND	ND
Benzo(b)fluoranthene	250 J	ND	760 J j	ND	200 J j	ND	440 J j	120 J	75 J
Benzo(ghi)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	93 J	ND	370 J j	ND	77 J j	ND	170 J j	ND	ND
bis(2-Chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethyl) ether	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl) phthalate	130 J	ND	320 J j	99 J	140 J j	71 J	61 J j	3,800	59 J
Butyl benzyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	280 J	ND	1,100 j	ND	230 J j	ND	520 j	100 J	71 J
Di-n-butyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	110 J j	ND	ND	ND	49 J j	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples collected on August 31, 2000.

A = Aldol condensation product.

J = Reported value is less than the reporting limit but greater than the method detection limit.

N = Indicates presumptive evidence of a tentatively identified compound.

j = Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND = Not Detected.

Table 4-24

SVOC Sampling Results - Low Lying Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL50-0.5'	SL50-4'	SL51-0.5'	SL51-4'	SL52-0.5'	SL52-4'	SL53-0.5'	SL54-0.5'	SL55-0.5'
Fluoranthene	390 J	ND	1,700 j	ND	380 J j	ND	970 j	110 J	100 J
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	53 J	ND	ND	ND	ND	ND	74 J j	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodi-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	91 J	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	350 J	ND	1,200 j	ND	280 J j	ND	730 j	66 J	63 J
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	340 J	ND	420 J j	97 J	210 J j	ND	520 j	110 J	160 J

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

Soil samples collected on August 31, 2000.

A = Aldol condensation product.

J = Reported value is less than the reporting limit but greater than the method detection limit.

N = Indicates presumptive evidence of a tentatively identified compound.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent. j-qualifier suggests uncertainty in the sample results.

ND = Not Detected.

Table 4-25
Results of Metal Sampling - Low Lying Area
Riverdale Chemical Company - Chicago Heights, Illinois

	SL50-0.5'	SL50-4'	SL51-0.5'	SL51-4'	SL52-0.5'	SL52-4'	SL53-0.5'	SL54-0.5'	SL55-0.5'
Aluminum	5,580 j	15,800 j	16,400 j	15,700 j	12,900 j	15,900 j	4,550 j	13,100 j	11,500 j
Antimony	1.1 BNj	ND	ND	ND	ND	ND	7.7 BNj	ND	ND
Arsenic	20	7.2	27.6	3.9	6.2	5.8	33.2	14.5	10.1
Barium	59.2	126	172	127	136	117	87.8	72.5	72.3
Beryllium	0.38 BU	0.61 BU	0.71 BU	0.83 BU	0.62 BU	0.68 BU	0.36 BU	0.43 BU	0.41 BU
Cadmium	0.56 BU	0.17 BU	1.5 BU	0.21 BU	0.80 BU	0.29 BU	2.6	0.34 BU	0.38 BU
Calcium	63,800	3,710	62,800	4,730	5,330	2,770	49,300	38,600	35,400
Chromium	29.7	22.5	68.2	21.9	18.2	25.1	23.6	22.8	21.2
Cobalt	7.9 B	13	15.9 B	7.3 B	9.8 B	11.0 B	14.7	12.1 B	10.2 B
Copper	34.1	18.1	78.5	17.6	34.3	18.5	534	28.5	38.9
Iron	32,000	24,300	44,100	19,100	20,200	25,300	135,000	24,400	25,000
Lead	78.5 j	15.6 j	154 j	14.6 j	52.8 j	16.3 j	255 j	32.5 j	53.0 j
Magnesium	33,400	4,040	21,900	3,490	3,170	5,080	5,440	18,000	15,100
Manganese	606	319	1,700	215	397	427	1,600	589	546
Mercury	0.067 B	ND	0.20 B	ND	0.096 B	ND	0.29	ND	ND
Nickel	17.7	22.6	46.8	20.8	20.9	31.5	25.4	30.7	25.9
Potassium	836 B	1,190 B	2,410 B	1,500	1,620	1,790	617 B	2,710	2,000
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	162 B	ND	252 B	ND	137 B	ND	135 B	118 B	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	15.1	28.3	36.4	27.3	24.2	26.1	23.3	25.4	23.7
Zinc	215	55.7	383	53.6	140	64.9	547	103	111

Notes:

All concentrations are presented in milligrams per kilogram (mg/kg).

Soil samples collected on August 31, 2000.

B = Analyte value is less then Contract Required Detection Limit, but equal to or greater than the instrument Detection Limit.

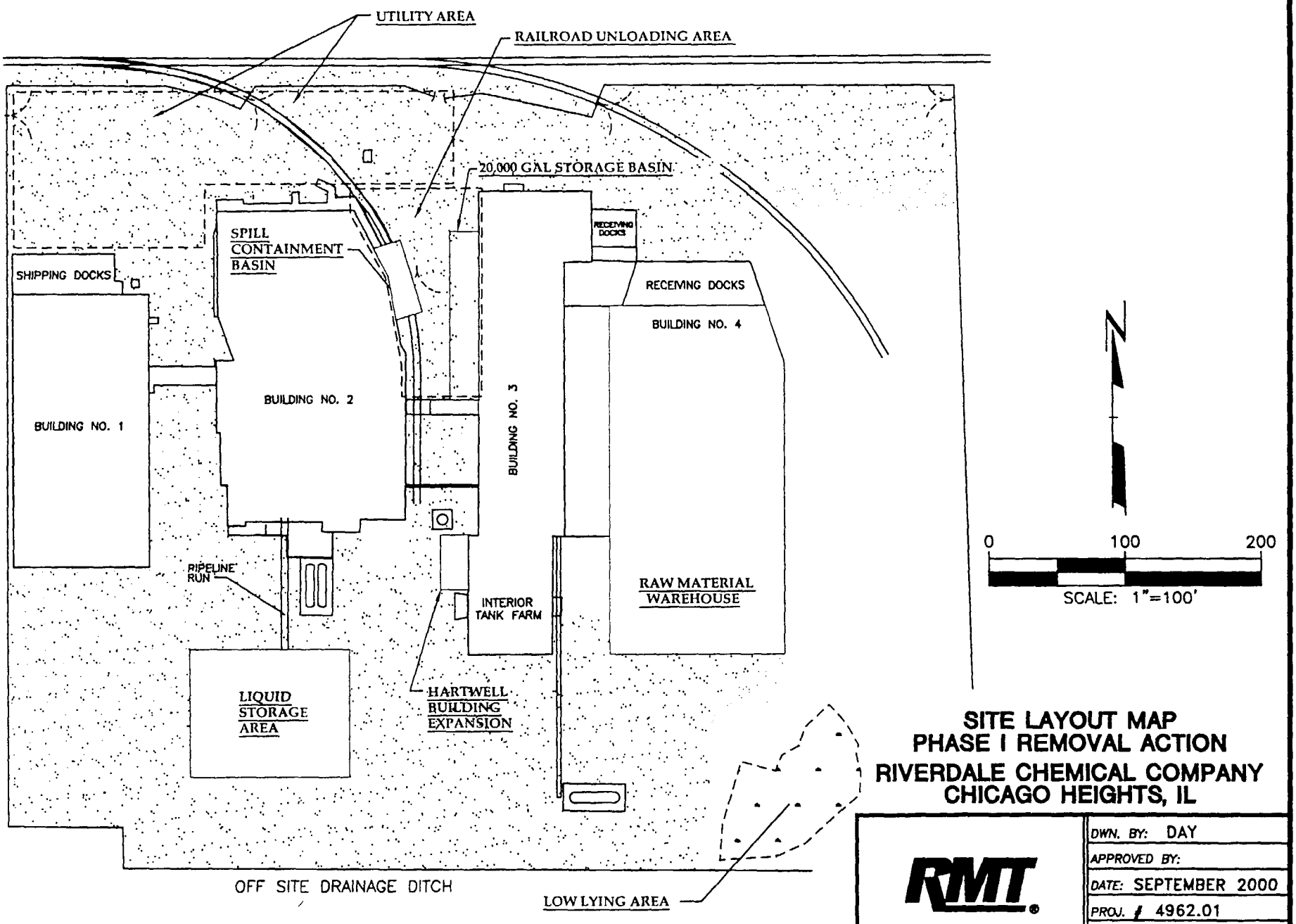
N = Spiked sample recovery exceeded the control limit.

U = Analyte was tested for but was not detected; value indicates the Detection Limit.

j = Specific QC criteria are outside the establishedcontrol limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND = Not Detected

RMT COMPUTER AIDED DESIGN & DRAFTING



SITE LAYOUT MAP
PHASE I REMOVAL ACTION
RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL

RMT

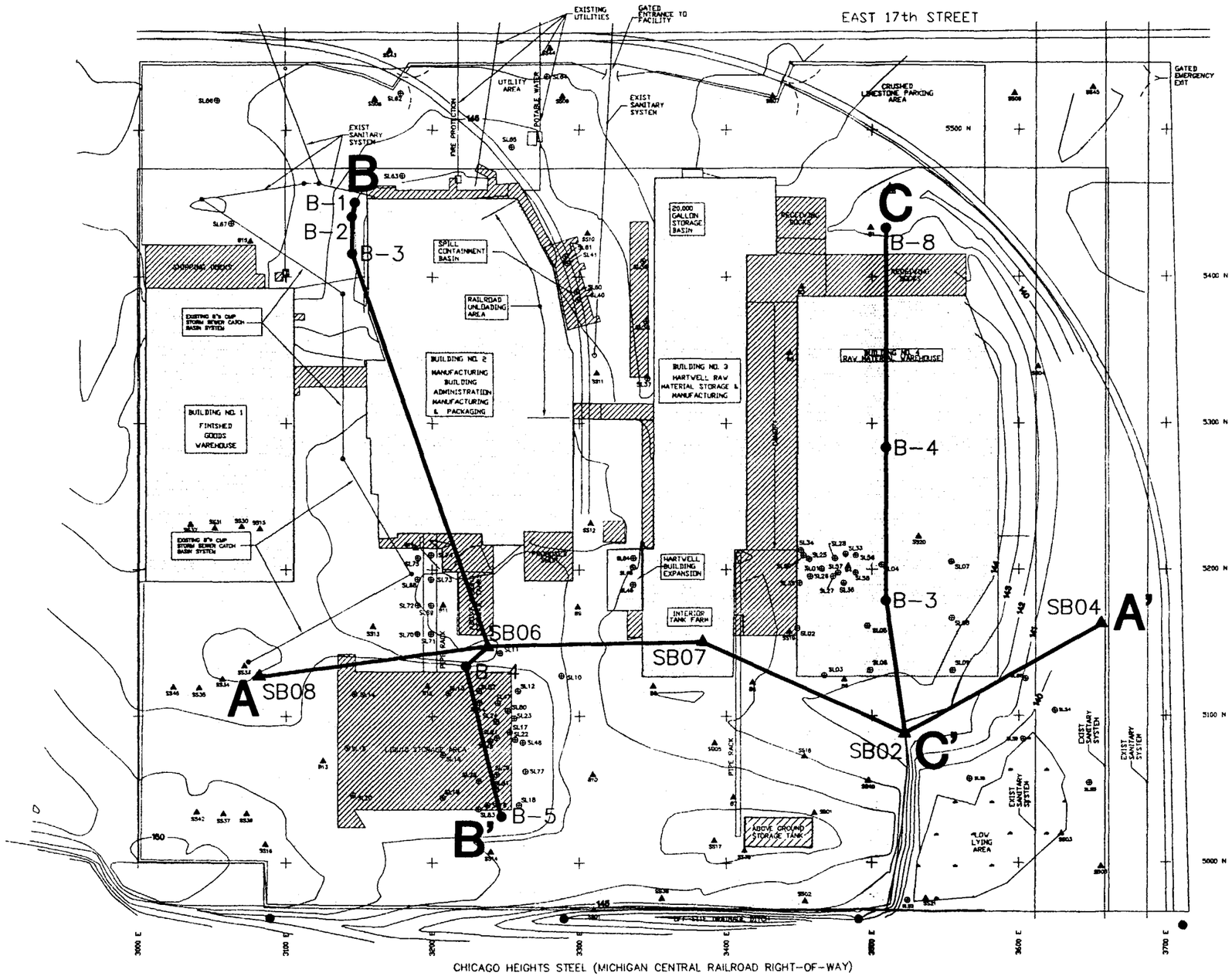
DWN. BY:	DAY
APPROVED BY:	
DATE:	SEPTEMBER 2000
PROJ. #	4962.01
FILE #	49620150

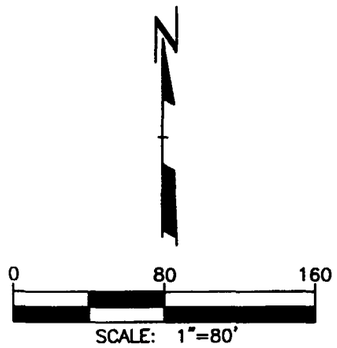
FIGURE 2-1

SDMS US EPA REGION V
FORMAT- OVERSIZED - 5
IMAGERY INSERT FORM

The item(s) listed below are not available in SDMS. In order to view original document or document pages, contact the Superfund Records Center.

SITE NAME	**RIVERDALE CHEMICAL**		
DOC ID #	**148054**		
DESCRIPTION OF ITEM(S)	**SITE MAP**		
REASON WHY UNSCANNABLE	**_X_ OVERSIZED**	**OR**	**___ FORMAT**
DATE OF ITEM(S)	**NOVEMBER AND DECEMBER, 2000**		
NO. OF ITEMS	**5**		
PHASE	**ERR**		
PRP	**RMV**		
PHASE (AR DOCUMENTS ONLY)	**___ Remedial ___ Removal ___ Deletion Docket ___ AR** **___ Original ____ Update # ___ Volume ____ of ___**		
O.U.			
LOCATION	**Box # 1 Folder # 1 Subsection _____**		
COMMENT(S)			
FIGURES 2-2, 2-3, 3-1, 4-1, 4-2			



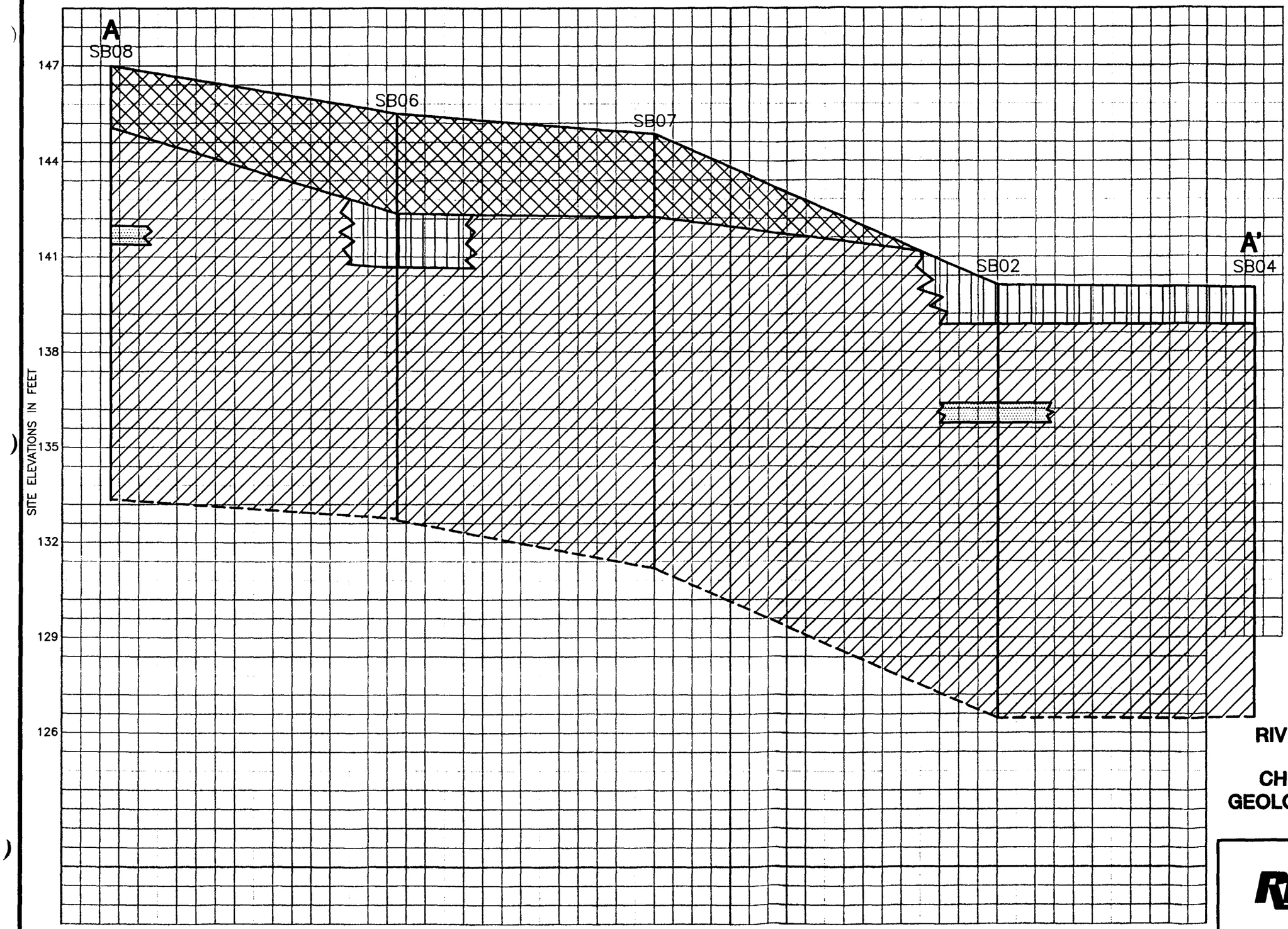


RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL
CROSS SECTION LOCATOR MAP

RMT

DWN. BY:	
APPROVED BY:	
DATE:	01.29.01
PROJ. #	4962.01
FILE #	49620172.DWG

FIGURE 2-4



LEGEND

- FILL
- SILT
- SILTY CLAY AND CLAY
- SAND AND SILTY SAND

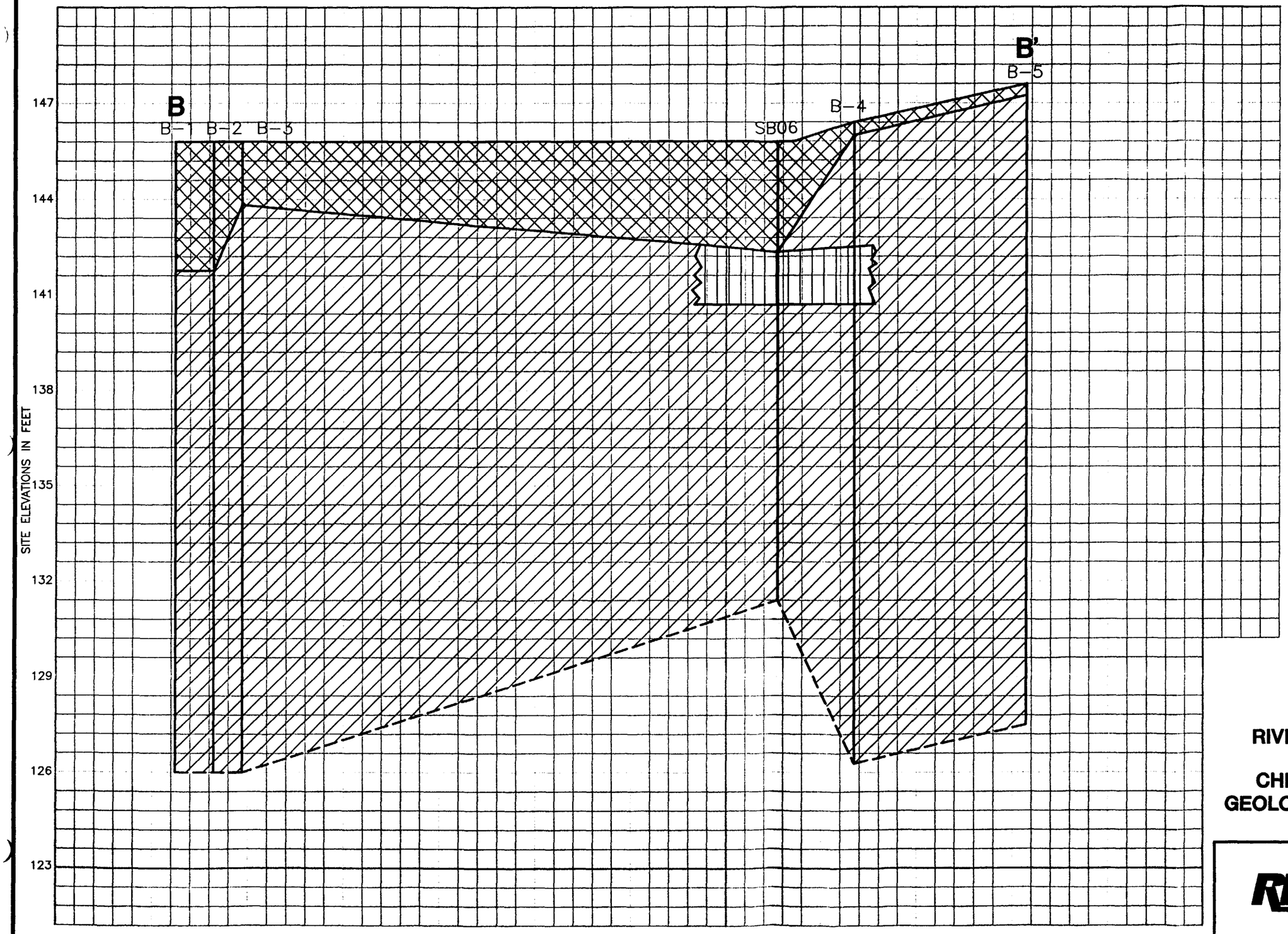
HORIZ. SCALE: 1"=50'
VERT. SCALE: 1"=3'

RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL
GEOLOGIC CROSS SECTION
A TO A'

RMT

DWN. BY:	MHS
APPROVED BY:	
DATE:	01.29.01
PROJ.#	4962.01
FILE #	49630173.DWG

FIGURE 2-5



LEGEND

- FILL
- SILT
- SILTY CLAY AND CLAY
- SAND AND SILTY SAND

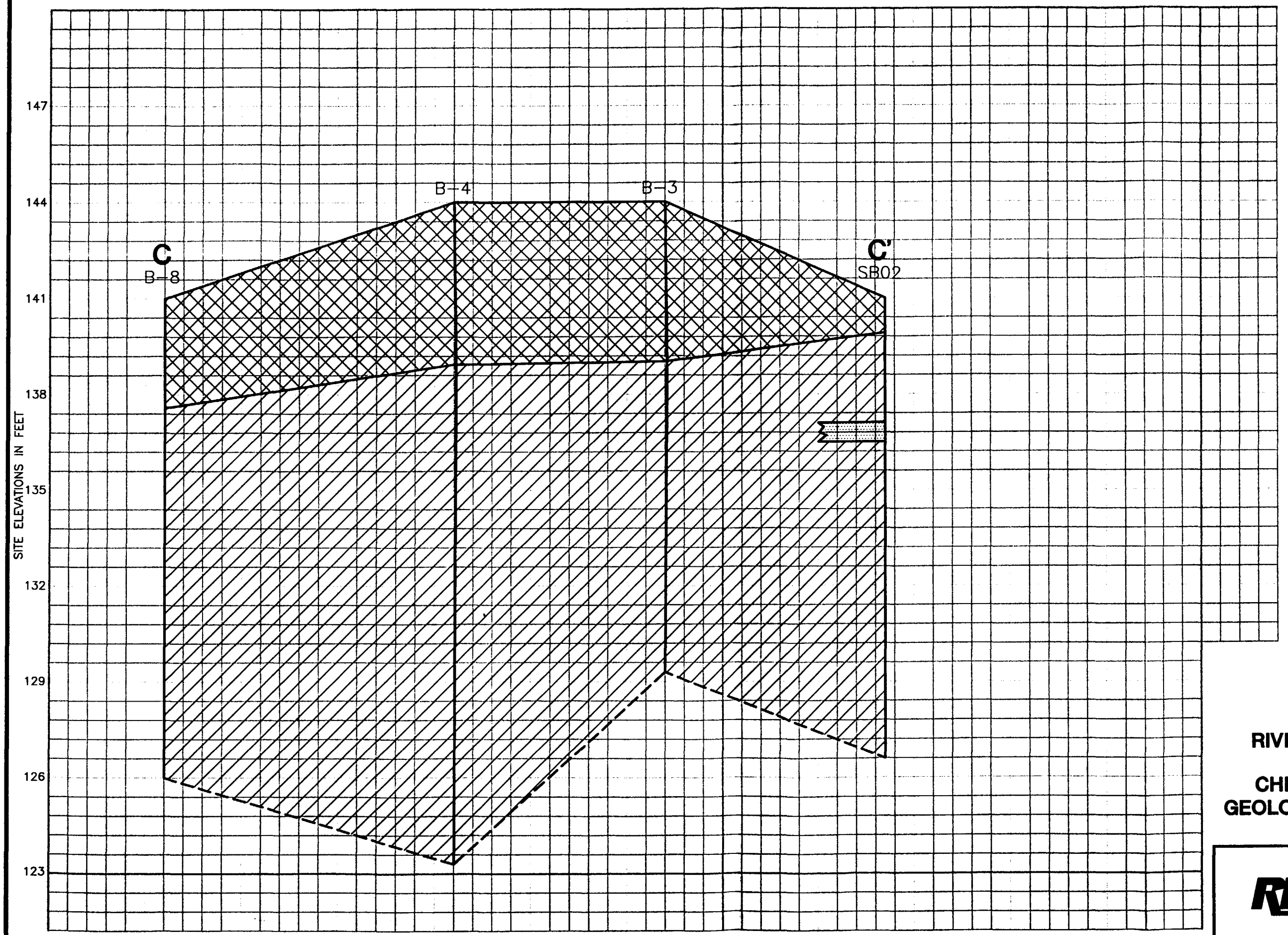
HORIZ. SCALE: 1"=50'
VERT. SCALE: 1"=3'

RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL
GEOLOGIC CROSS SECTION
B TO B'

RMT

DWN. BY:	MHS
APPROVED BY:	
DATE:	01.29.01
PROJ.#	4962.01
FILE #	49630176.DWG

FIGURE 2-6



LEGEND

- FILL
- SILT
- SILTY CLAY AND CLAY
- SAND AND SILTY SAND

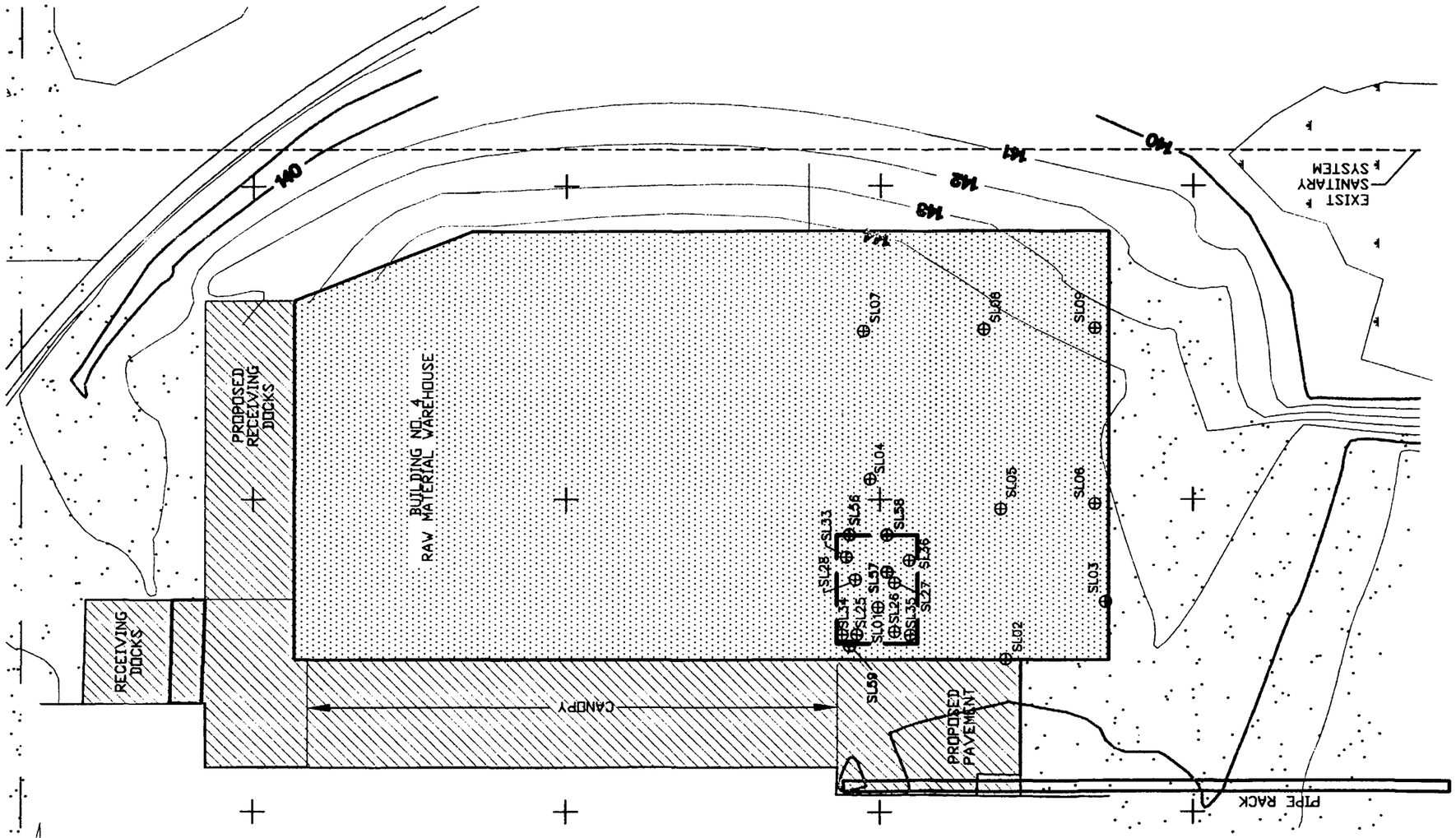
HORIZ. SCALE: 1"=50'
VERT. SCALE: 1"=3'

RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL
GEOLOGIC CROSS SECTION C TO C'

RMT.

DWN. BY:	MHS
APPROVED BY:	
DATE:	01.29.01
PROJ.#	4962.01
FILE #	49630177.DWG

FIGURE 2-7



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GRID LOCATION
- EXISTING RAILROAD
- EXISTING FENCE
- EXISTING STRUCTURE
- 800 EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- CB EXISTING CATCH BASIN (TO BE ABANDONED)
- CB EXISTING CATCH BASIN (TO REMAIN)
- 143 1' CONTOUR
- 145 5' CONTOUR
- 142.10x SPOT ELEVATION
- RETAINING WALL
- BUILDING/STRUCTURE
- EDGE OF PAVING
- RIDGE LINE
- SWALE AND DIRECTION OF FLOW
- PROPERTY BOUNDRY

- CONCRETE PAVING
- COMPACTED CRUSHED LIMESTONE
- BUILDINGS
- APPROXIMATE EXCAVATED AREAS

LEGEND:

- ⊕ REMOVAL ACTION SOIL SAMPLING LOCATION
- ● PROPOSED OFFSITE SAMPLE LOCATION

NOTE:

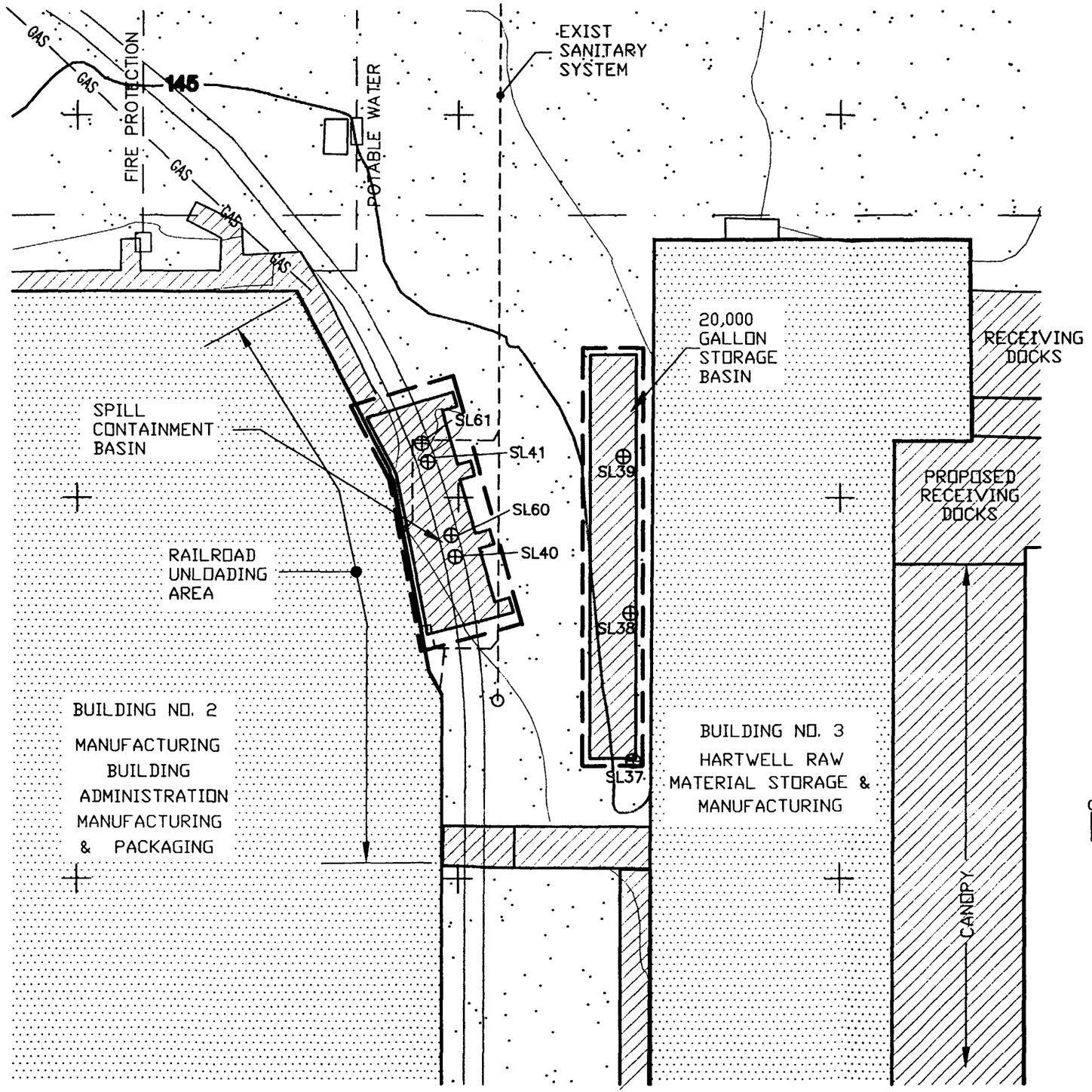
1. LOCATIONS SL 01 THROUGH SL 84 WERE SAMPLED DURING THE PHASE I REMOVAL ACTION--EMERGENCY RESPONSE IN JULY THROUGH SEPTEMBER, 2000.
2. ADDITIONAL EXCAVATION OCCURED AT THE LIQUID STORAGE AREA DUE TO CONSTRUCTION CONSIDERATIONS.

RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL
RAW MATERIAL WAREHOUSE SAMPLING LOCATIONS

RMT

DWN. BY:	MHS
APPROVED BY:	
DATE:	1.23.01
PROJ. #	4962.01
FILE #	49620170

FIGURE 3-2



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GRID LOCATION
- EXISTING RAILROAD
- EXISTING FENCE
- EXISTING STRUCTURE
- 800 EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- CB EXISTING CATCH BASIN (TO BE ABANDONED)
- CB EXISTING CATCH BASIN (TO REMAIN)
- 143 1' CONTOUR
- 145 5' CONTOUR
- 148.10x SPOT ELEVATION
- RETAINING WALL
- BUILDING/STRUCTURE
- EDGE OF PAVING
- RIDGE LINE
- SWALE AND DIRECTION OF FLOW
- PROPERTY BOUNDRY
- CONCRETE PAVING
- COMPACTED CRUSHED LIMESTONE
- BUILDINGS
- APPROXIMATE EXCAVATED AREAS

LEGEND:

- ⊕ REMOVAL ACTION SOIL SAMPLING LOCATION
- ● PROPOSED OFFSITE SAMPLE LOCATION

NOTE:

1. LOCATIONS SL 01 THROUGH SL 84 WERE SAMPLED DURING THE PHASE I REMOVAL ACTION-EMERGENCY RESPONSE IN JULY THROUGH SEPTEMBER, 2000.
2. ADDITIONAL EXCAVATION OCCURED AT THE LIQUID STORAGE AREA DUE TO CONSTRUCTION CONSIDERATIONS.

N

0 30 60

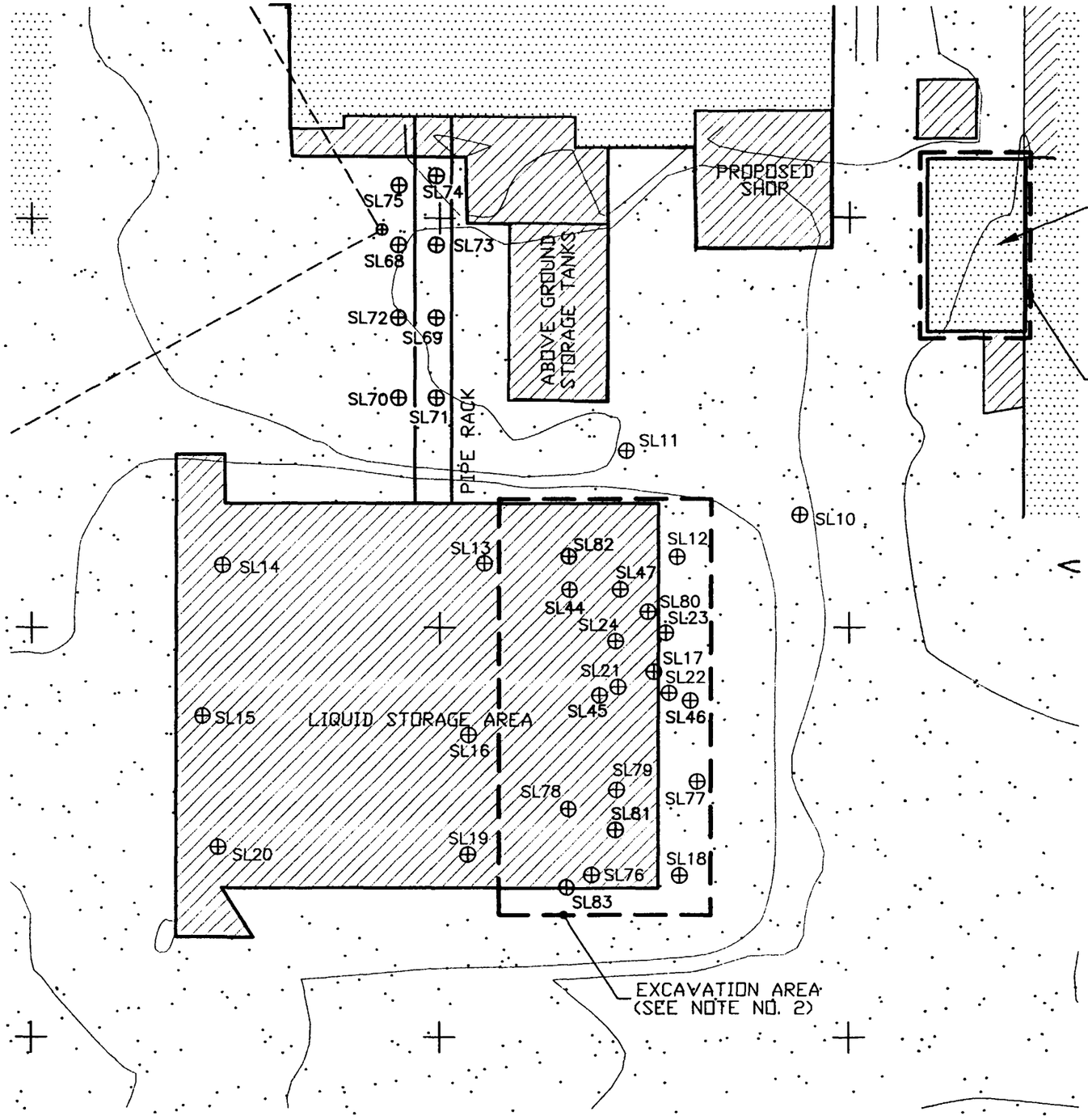
SCALE: 1"=30'

RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL
RAILROAD UNLOADING AREA SAMPLING LOCATIONS

RMT

DWN. BY:	MHS
APPROVED BY:	
DATE:	1.23.01
PROJ. #	4962.01
FILE #	49620165

FIGURE 3-3



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GRID LOCATION
- EXISTING RAILROAD
- EXISTING FENCE
- EXISTING STRUCTURE
- 800 EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- CB EXISTING CATCH BASIN (TO BE ABANDONED)
- CB EXISTING CATCH BASIN (TO REMAIN)
- 143 1' CONTOUR
- 145 5' CONTOUR
- 148.10x SPOT ELEVATION
- RETAINING WALL
- BUILDING/STRUCTURE
- EDGE OF PAVING
- RIDGE LINE
- SWALE AND DIRECTION OF FLOW
- PROPERTY BOUNDRY
- CONCRETE PAVING
- COMPACTED CRUSHED LIMESTONE
- BUILDINGS
- APPROXIMATE EXCAVATED AREAS

LEGEND:

- ⊕ REMOVAL ACTION SOIL SAMPLING LOCATION
- ● PROPOSED OFFSITE SAMPLE LOCATION

NOTE:

1. LOCATIONS SL 01 THROUGH SL 84 WERE SAMPLED DURING THE PHASE I REMOVAL ACTION-EMERGENCY RESPONSE IN JULY THROUGH SEPTEMBER, 2000.
2. ADDITIONAL EXCAVATION OCCURED AT THE HARTWELL BUILDING EXPANSION AND AT THE LIQUID STORAGE AREA DUE TO CONSTRUCTION CONSIDERATIONS.

N

0 30 60

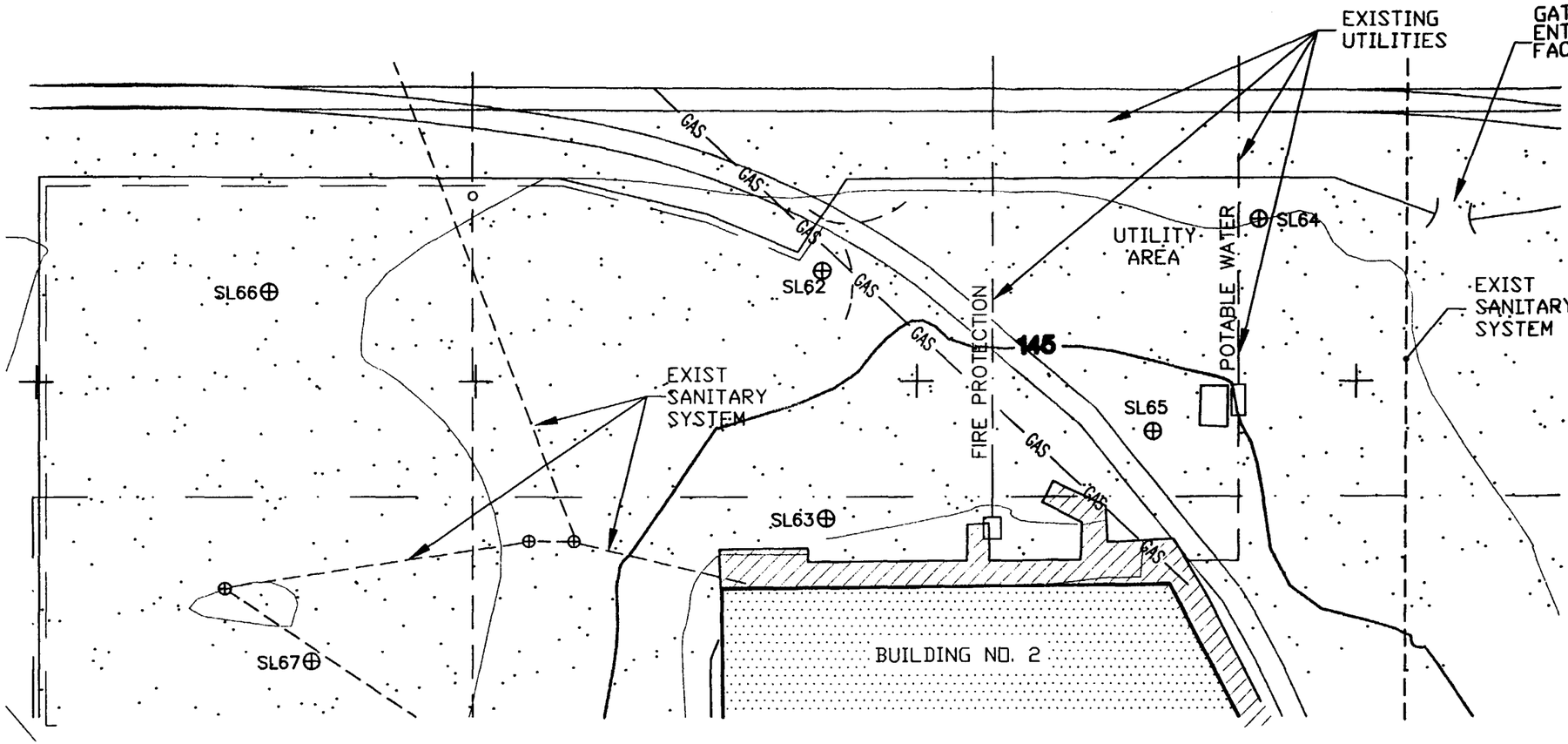
SCALE: 1"=30'

RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL
LIQUID STORAGE AREA SAMPLING LOCATIONS

RMT

DWN. BY:	MHS
APPROVED BY:	
DATE:	1.23.01
PROJ. #	4962.01
FILE #	49620166

FIGURE 3-4



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GRID LOCATION
- EXISTING RAILROAD
- EXISTING FENCE
- EXISTING STRUCTURE
- 800 EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- CB EXISTING CATCH BASIN (TO BE ABANDONED)
- CB EXISTING CATCH BASIN (TO REMAIN)
- 143 1' CONTOUR
- 145 5' CONTOUR
- 148.10x SPOT ELEVATION
- RETAINING WALL
- BUILDING/STRUCTURE
- EDGE OF PAVING
- RIDGE LINE
- SWALE AND DIRECTION OF FLOW
- PROPERTY BOUNDRY
- CONCRETE PAVING
- COMPACTED CRUSHED LIMESTONE
- BUILDINGS
- APPROXIMATE EXCAVATED AREAS

LEGEND:

- ⊕ REMOVAL ACTION SOIL SAMPLING LOCATION
- ● PROPOSED OFFSITE SAMPLE LOCATION

NOTE:
1. LOCATIONS SL 01 THROUGH SL 84 WERE SAMPLED DURING THE PHASE I REMOVAL ACTION–EMERGENCY RESPONSE IN JULY THROUGH SEPTEMBER, 2000.
2. ADDITIONAL EXCAVATION OCCURED AT THE LIQUID STORAGE AREA DUE TO CONSTRUCTION CONSIDERATIONS.

N

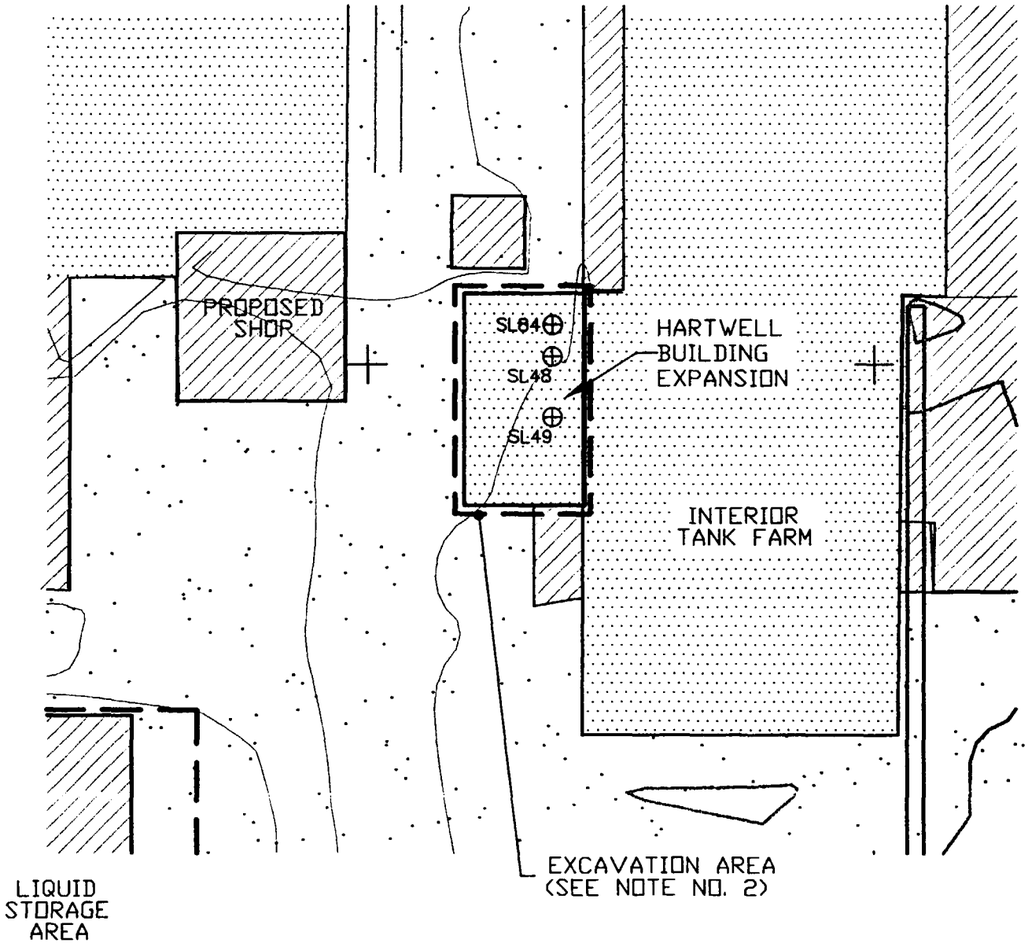
0 30 60

SCALE: 1"=30'

RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL
UTILITY AREA
SAMPLING LOCATIONS

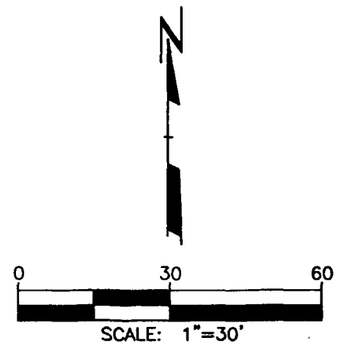
RMT	DWN. BY: MHS
	APPROVED BY:
	DATE: 1.23.01
	PROJ. # 4962.01
	FILE # 49620167

FIGURE 3-5



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GRID LOCATION
- EXISTING RAILROAD
- EXISTING FENCE
- EXISTING STRUCTURE
- 800 EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- CB EXISTING CATCH BASIN (TO BE ABANDONED)
- CB EXISTING CATCH BASIN (TO REMAIN)
- 143 1' CONTOUR
- 145 5' CONTOUR
- 142.10x SPOT ELEVATION
- RETAINING WALL
- BUILDING/STRUCTURE
- EDGE OF PAVING
- RIDGE LINE
- SWALE AND DIRECTION OF FLOW
- PROPERTY BOUNDRY
- CONCRETE PAVING
- COMPACTED CRUSHED LIMESTONE
- BUILDINGS
- APPROXIMATE EXCAVATED AREAS



LEGEND:

- ⊕ REMOVAL ACTION SOIL SAMPLING LOCATION
- ● PROPOSED OFFSITE SAMPLE LOCATION

NOTE:

1. LOCATIONS SL 01 THROUGH SL 84 WERE SAMPLED DURING THE PHASE I REMOVAL ACTION–EMERGENCY RESPONSE IN JULY THROUGH SEPTEMBER, 2000.
2. ADDITIONAL EXCAVATION OCCURED AT THE HARTWELL BUILDING EXPANSION AND AT THE LIQUID STORAGE AREA DUE TO CONSTRUCTION CONSIDERATIONS.

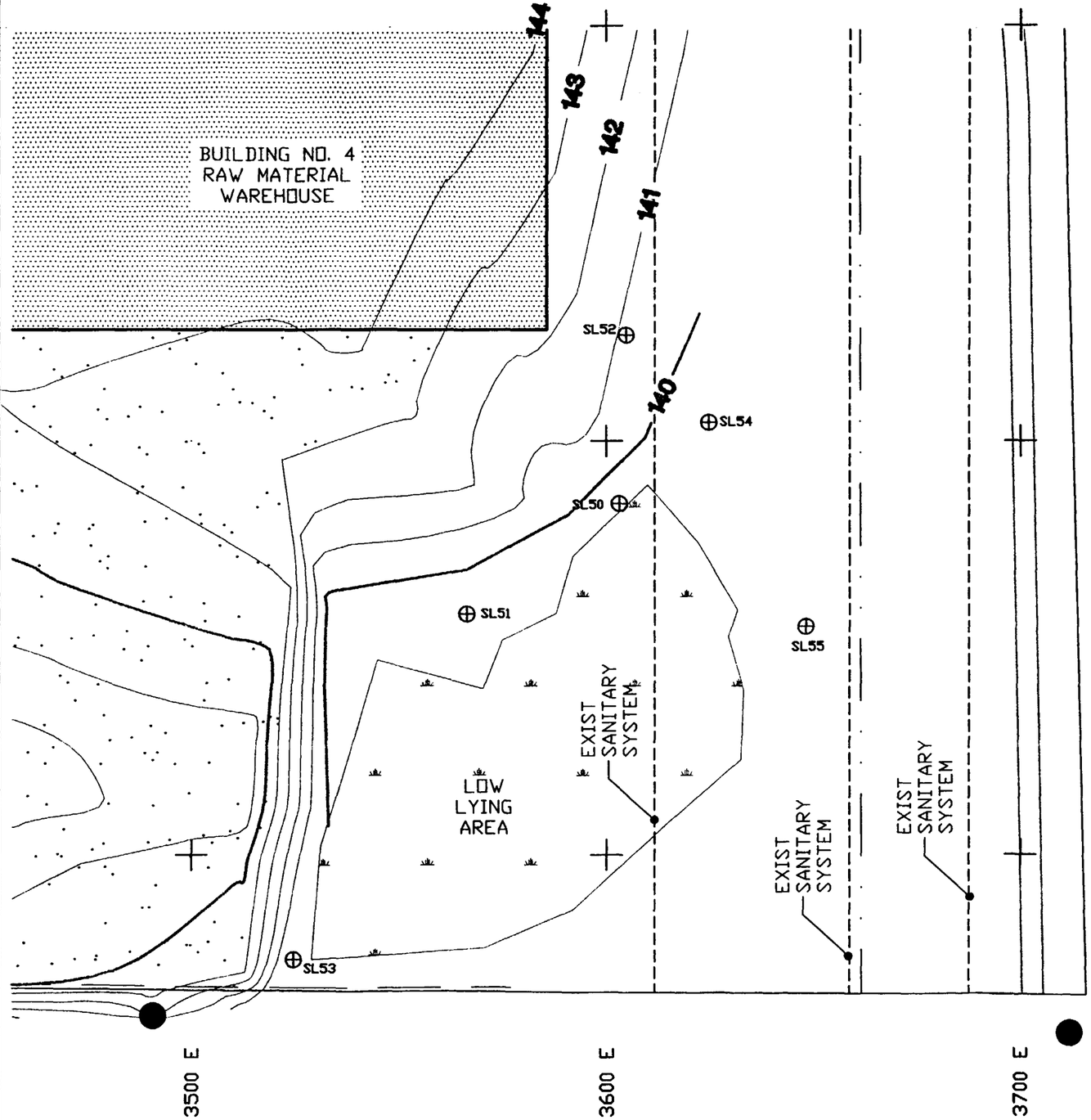
RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL

HARTWELL BUILDING EXPANSION SAMPLING LOCATIONS

RMT

DWN. BY:	MHS
APPROVED BY:	
DATE:	1.23.01
PROJ. #	4962.01
FILE #	49620169

FIGURE 3-6



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GRID LOCATION
- EXISTING RAILROAD
- EXISTING FENCE
- EXISTING STRUCTURE
- 600 EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- CB EXISTING CATCH BASIN (TO BE ABANDONED)
- CB EXISTING CATCH BASIN (TO REMAIN)
- 143 1' CONTOUR
- 145 5' CONTOUR
- 142.10x SPOT ELEVATION
- RETAINING WALL
- BUILDING/STRUCTURE
- EDGE OF PAVING
- RIDGE LINE
- SWALE AND DIRECTION OF FLOW
- PROPERTY BOUNDRY
- CONCRETE PAVING
- COMPACTED CRUSHED LIMESTONE
- BUILDINGS
- APPROXIMATE EXCAVATED AREAS

LEGEND:

- ⊕ REMOVAL ACTION SOIL SAMPLING LOCATION
- ● PROPOSED OFFSITE SAMPLE LOCATION

NOTE:

1. LOCATIONS SL 01 THROUGH SL 84 WERE SAMPLED DURING THE PHASE I REMOVAL ACTION-EMERGENCY RESPONSE IN JULY THROUGH SEPTEMBER, 2000.
2. ADDITIONAL EXCAVATION OCCURED AT THE LIQUID STORAGE AREA DUE TO CONSTRUCTION CONSIDERATIONS.

RIVERDALE CHEMICAL COMPANY
CHICAGO HEIGHTS, IL
LOW LYING AREA
SAMPLING LOCATIONS

RMT

DWN. BY:	MHS
APPROVED BY:	
DATE:	1.23.01
PROJ. #	4962.01
FILE #	49620168

FIGURE 3-7

Appendix A
Cross-Section Soil Boring Logs

DATE BEGAN: 10/17/85
DATE FINISHED: 10/18/85
GROUND SURFACE EL: 671.33

BORING NO. SB06

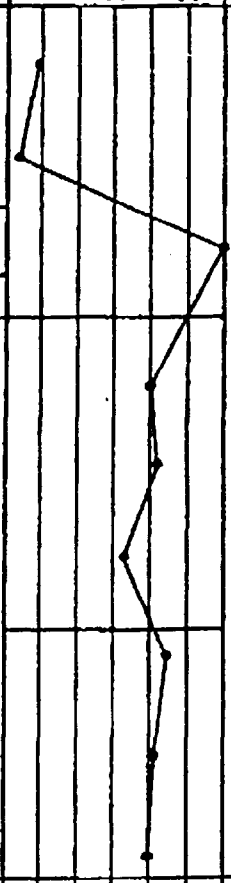
N N/A E N/A

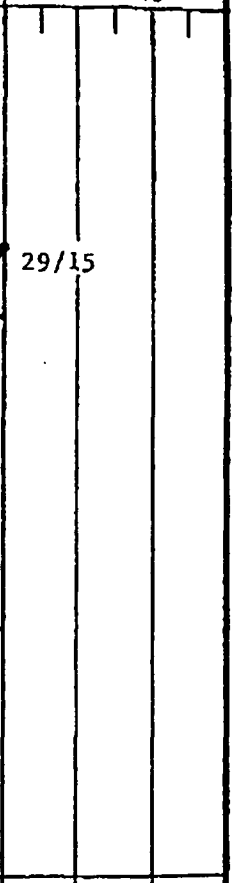
FIELD ENGINEER: M. Hinchey
CHECKED BY: R. Spanbauer

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE	PROFILE	DESCRIPTION	USCS
		01		Fill, sandy gravel with brick fragments, rocks and cinders, wet	hf
	2.5	02		3.2	
		03		Soft to meduim stiff blue gray clayey silt, some organic matter, moist 4.3	hf
	5.0			No sample 5.0	
		04			
		05			
	7.5				
		06		Very stiff to hard yellow brown to gray silty clay to clay, some silt, dry	cl
	10.0	07			
		08			
	12.5				
		09			
674.33	14.0			14.0	
				Bottom of Boring	

NOTE: Boring was offset twice due to auger refusal at 1.0 and 5.0 feet.

High OVA readings were noted at 5.0 feet





PROJECT NO. 850037

DATE BEGAN: 10/17/85
DATE FINISHED: 10/17/85
GROUND SURFACE EL: 669.89

BORING NO. SB07

N N/A E N/A

FIELD ENGINEER: M. Hinchey
CHECKED BY: R. Spanbauer

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE	PROFILE	DESCRIPTION	USCS
		01		Fill, yellow brown to black silty clay with brick and rock fragments, cinders, dry	hf
	2.5	02		2.7	
		03		Soft to medium stiff yellow brown to gray silty clay, mottled, moist	cl
	5.0	04		6.0	
	7.5	05			
		06		Hard yellow brown to gray silty clay, mottled, dry	cl
	10.0	07			
		08			
	12.5				
672.79	13.5	09		13.5	
				Bottom of Boring	

PENETRATION RESISTANCE (BLOWS PER FOOT) 10 30 50

55/12

WATER CONTENT (PERCENT) 20 40

PROJECT NO. 850037

DATE BEGAN: 10/15/85
DATE FINISHED: 10/15/85
GROUND SURFACE EL: 665.74

BORING NO. SB02

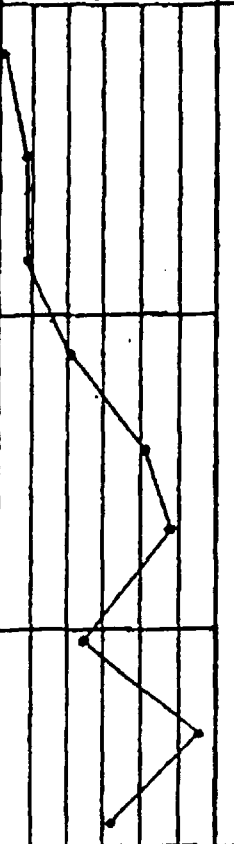
N N/A E N/A

FIELD ENGINEER: M. Hinchey
CHECKED BY: R. Spanbauer

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE	PROFILE	DESCRIPTION	USCS
		01		Soft black silt, highly organic, some brick fragments, moist 1.0	pt
	2.5	02		Soft yellow brown to gray silty clay, mottled, moist	ml-cl
		03		4.0	
	5.0			Loose gray to yellow silty medium grained sand, some gravel, moist 4.5	sm
		04			
	7.5	05		Very stiff to hard yellow brown silty clay, occasional gravel, pieces, mottled, dry	cl
		06		9.0	
	10.0	07		Medium stiff to stiff gray brown silty clay, mottled, moist	cl-ml
		08		Very hard medium gray clay, some silt, occasional gravel pieces, occasional mottling, dry	cl-ch
	12.5				
668.2	13.5	09		13.5	
				Bottom of Boring	

PENETRATION RESISTANCE (BLOWS PER FOOT) 10 30 50

WATER CONTENT (PERCENT) 20 40



PROJECT NO. 850037

DATE BEGAN: 10/16/85
DATE FINISHED: 10/16/85
GROUND SURFACE EL: 665.33

BORING NO. SB04

N N/A E N/A

FIELD ENGINEER: M. Hinchey
CHECKED BY: R. Spanbauer

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE	PROFILE	DESCRIPTION	USCS
		01		Loose dark brown to black silt 1.0	ml
				Stiff light yellow gray silty clay, dry 1.5	cl
	2.5	02			
		03		Very stiff light yellow brown to gray silty clay, some organic matter, trace gravel, mottled, dry	cl
	5.0	04		6.0	
		05		Hard yellow brown to gray silty clay, mottled, ¼ inch snad inclusion at approximately 9.0 feet, dry	cl
	7.5	06			
	10.0	07			
		08			
	12.5	09			
667.83	13.5			13.5	
				Bottom of Boring	

PENETRATION RESISTANCE (BLOWS PER FOOT) 10 30 50

WATER CONTENT (PERCENT) 20 40

PROJECT NO. 850037

CLIENT	LOG OF BORING NUMBER
Riverdale Chemical Company	B-1
SITE LOCATION Riverdale Chemical Company-220 East 17th Street-Chicago Heights, IL	PROJECT NAME Proposed One-Story Pre-engineered Building
BORING STARTED 08-23-00 / RIG Diedrich D-50	FILE NUMBER 5961
BORING COMPLETED 08-23-00 / FOREMAN Ruben Perez	

⊕ CALIBRATED PENETROMETER, TONS/FT²
○ UNCONFINED COMPRESSIVE STRENGTH TONS/FT²
1 2 3 4 5
● WATER CONTENT
10 20 30 40 50
△ STANDARD PENETRATION, BLOWS/FT
10 20 30 40 50

STRATA DEPTH (FT.)	GRAPHIC LOG	DESCRIPTION OF MATERIAL	DEPTH (FT.)	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE NUMBER
		Medium dense red brick pieces, trace black sand (FILL)				1
		- becoming loose at 2 feet	2.5			2
4.0		Very stiff brown and gray silty Clay	5.0			3
		- becoming hard	7.5			4
8.5		Hard brown, trace gray silty Clay	10.0			5
			12.5			6
			15.0			7
			17.5			
18.5		Very stiff gray silty Clay				8
20.0		END OF BORING @ 20.0 FEET	20.0			

▽ WATER LEVEL WHILE DRILLING None
▼ WATER LEVEL Dry At Completion

REMARKS

SPLIT SPOON ■ SHELBY TUBE A AUGER ROCK CORE
+ PL - PLASTIC LIMIT + LL - LIQUID LIMIT γ_d - UNIT DRY WEIGHT

K & S ENGINEERS, INC.

LB 5961 08-30-00

CLIENT	LOG OF BORING NUMBER
Riverdale Chemical Company	B-2
SITE LOCATION: Riverdale Chemical Company-220 East 17th Street-Chicago Heights, IL	PROJECT NAME: Proposed One-Story Pre-engineered Building
BORING STARTED: 08-23-00 — RIG: Diedrich D-50	FILE NUMBER: 5961
BORING COMPLETED: 08-23-00 — FOREMAN: Ruben Perez	

⊕ CALIBRATED PENETROMETER, TONS/FT²
○ UNCONFINED COMPRESSIVE STRENGTH TONS/FT²
● WATER CONTENT
△ STANDARD PENETRATION, BLOWS/FT

STRATA DEPTH (FT.)	GRAPHIC LOG	DESCRIPTION OF MATERIAL	DEPTH (FT.)	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE NUMBER
0.8		Stone 10 inches				
2.0		Medium dense black clayey sand, some red brick pieces and gravel (FILL)				1
		Medium stiff dark gray to black organic silty Clay (FILL)	2.5			2
4.0		Very stiff brown and gray silty Clay	5.0			3
6.0		Hard brown, with gray streaks, silty Clay, trace gravel	7.5			4
			10.0			5
			12.5			6
			15.0			7
			17.5			
18.5		Very stiff gray silty Clay, trace gravel				8
20.0		END OF BORING @ 20.0 FEET	20.0			

▽ WATER LEVEL WHILE DRILLING None
▼ WATER LEVEL Dry At Completion

REMARKS

SPLIT SPOON ■ SHELBY TUBE A AUGER ROCK CORE
+ PL - PLASTIC LIMIT + LL - LIQUID LIMIT γ_d - UNIT DRY WEIGHT

K & S ENGINEERS, INC.

LB 5961 08-30-00

CLIENT: Riverdale Chemical Company

LOG OF BORING NUMBER: B-3

SITE LOCATION: Riverdale Chemical Company-220 East 17th Street-Chicago Heights, IL

PROJECT NAME: Proposed One-Story Pre-engineered Building

BORING STARTED	08-23-00	RIG	Diedrich D-50
BORING COMPLETED	08-23-00	FOREMAN	Ruben Perez

FILE NUMBER: 5961

⊕ CALIBRATED PENETROMETER, TONS/FT²
○ UNCONFINED COMPRESSIVE STRENGTH TONS/FT²
● WATER CONTENT
△ STANDARD PENETRATION, BLOWS/FT

STRATA DEPTH (FT.)	GRAPHIC LOG	DESCRIPTION OF MATERIAL	DEPTH (FT.)	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE NUMBER
0.8		Gravel 10 inches				
2.0		Loose black sand, gravel and soft organic clay (FILL)				1
		Medium stiff brown and gray silty Clay	2.5			2
		- becoming hard at 4 feet	5.0			3
			7.5			4
			10.0			5
11.0		Hard brown silty Clay, trace gravel				
			12.5			6
			15.0			7
			17.5			
18.5		Very stiff gray silty Clay				
20.0			20.0			8
		END OF BORING @ 20.0 FEET				

▽ WATER LEVEL WHILE DRILLING None
▼ WATER LEVEL Dry At Completion

REMARKS

SPLIT SPOON ■ SHELBY TUBE A AUGER ROCK CORE
+ PL - PLASTIC LIMIT + LL - LIQUID LIMIT γ_d - UNIT DRY WEIGHT

K & S ENGINEERS, INC.

LB 5961 08-30-00

DATE BEGAN: 10/17/85
DATE FINISHED: 10/18/85
GROUND SURFACE EL: 671.33

BORING NO. SB06

N N/A E N/A

FIELD ENGINEER: M. Hinchey
CHECKED BY: R. Spanbauer

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE	PROFILE	DESCRIPTION	USCS
		01		Fill, sandy gravel with brick fragments, rocks and cinders, wet	hf
	2.5	02		3.2	
		03		Soft to meduim stiff blue gray clayey silt, some organic matter, moist 4.3	hf
	5.0			No sample 5.0	
		04			
		05			
	7.5				
		06		Very stiff to hard yellow brown to gray silty clay to clay, some silt, dry	cl
	10.0	07			
		08			
	12.5				
		09			
674.33	14.0			14.0	
				Bottom of Boring	

NOTE: Boring was offset twice due to auger refusal at 1.0 and 5.0 feet.

High OVA readings were noted at 5.0 feet

PENETRATION RESISTANCE (BLOWS PER FOOT) 10 30 50

WATER CONTENT (PERCENT) 20 40

29/15

PROJECT NO. 850037

CLIENT: Riverdale Chemical Company

LOG OF BORING NUMBER: B-4

SITE LOCATION: Riverdale Chemical Company

PROJECT NAME: Geotechnical Exploration

BORING STARTED	03-20-00	RIG	D-50
BORING COMPLETED	03-20-00	FOREMAN	Ruben

FILE NUMBER: 5740

⊕ CALIBRATED PENETROMETER, TONS/FT²
○ UNCONFINED COMPRESSIVE STRENGTH TONS/FT²
1 2 3 4 5
● WATER CONTENT
10 20 30 40 50
△ STANDARD PENETRATION, BLOWS/FT
10 20 30 40 50

STRATA DEPTH (FT.)	GRAPHIC LOG	DESCRIPTION OF MATERIAL	DEPTH (FT.)	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE NUMBER
0.5		6 inches crushed stone				
1.0		Medium stiff, brown and gray, mottled, moist, silty Clay trace fine to coarse sand and organics	2.5			1
		- Grades to stiff below 3.5 feet	5.0			2
6.0		Hard, brown, moist, silty Clay trace fine to coarse sand	7.5			3
			10.0			4
			12.5			5
13.5		Hard, gray, moist, silty Clay trace fine to coarse sand	15.0			6
			17.5			
		- Grades to very stiff below 18.5 feet				7
20.0		Bottom of Boring @ 20.0 feet	20.0			

No water encountered while drilling.

REMARKS

SPLIT SPOON ■ SHELBY TUBE A AUGER ROCK CORE
+ PL - PLASTIC LIMIT + LL - LIQUID LIMIT γ_d - UNIT DRY WEIGHT

K & S ENGINEERS, INC.

LB 5740 04-05-00

EXHIBIT
Sheet 1 of 1

CLIENT: Riverdale Chemical Company	LOG OF BORING NUMBER: B-5
SITE LOCATION: Riverdale Chemical Company	PROJECT NAME: Geotechnical Exploration
BORING STARTED: 03-21-00	RIG: D-50
BORING COMPLETED: 03-21-00	FOREMAN: Ruben
FILE NUMBER: 5740	

⊕ CALIBRATED PENETROMETER, TONS/FT²
○ UNCONFINED COMPRESSIVE STRENGTH TONS/FT²
● WATER CONTENT
△ STANDARD PENETRATION, BLOWS/FT

STRATA DEPTH (FT.)	GRAPHIC LOG	DESCRIPTION OF MATERIAL	DEPTH (FT.)	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE NUMBER
0.5		6 inches crushed stone				
1.0		Very stiff, brown, moist, silty Clay with gravel	2.5			1
3.5		Stiff, dark gray, moist, silty Clay trace fine to coarse sand	5.0			2
6.0		Hard, brown and gray, mottled, moist, silty Clay trace fine to coarse sand	7.5			3
			10.0			4
11.0		Hard, brown, moist, silty Clay trace fine to coarse sand	12.5			5
			15.0			6
18.5			17.5			
20.0		Very stiff, gray, moist, silty Clay trace fine to coarse sand	20.0			7
		Bottom of Boring @ 20.0 feet				

No water encountered while drilling.

REMARKS

SPLIT SPOON ■ SHELBY TUBE A AUGER ROCK CORE
+ PL - PLASTIC LIMIT + LL - LIQUID LIMIT γ_d - UNIT DRY WEIGHT

K & S ENGINEERS, INC.

LB 5740 04-05-00

LOG OF BORING NO. 8

CLIENT: ALTRA BUILDERS

SITE: 220 EAST 17TH STREET, CHICAGO HEIGHTS, ILLINOIS

PROJECT: RIVERDALE CHEMICAL COMPANY ADDITIONS

Approx. Surface Elev.: 96.5 ft

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N ** BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
	0.2 2" Stone 0.8 8" Bricks, Stone and Gravel FILL: SANDY LEAN CLAY, Dark Brown and Black	96.5 95.5			PA					
				1	ST	18				
	3.5	93		2	ST			40.6		
	LEAN CLAY, TRACE SAND AND GRAVEL, Brown and Gray, Very Stiff		CL					29.2	98	
		5			PA					
				3	SS	NR	12			
					PA					
			CL	4	SS	10	34	24.4		6000*
		10			PA					
			CL	5	SS	15	38	22.1		6500*
	15	81.5								
	BOTTOM OF BORING	15								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**140 Lbs Automatic SPT Hammer
*Calibrated Hand Penetrometer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 3	WD	▼ 11 AB
WL	▼		▼
WL			

Terracon

BORING STARTED	5-9-00		
BORING COMPLETED	5-9-00		
RIG		FOREMAN	ML
APPROVED	MA	JOB #	11005617

BORE1 11005617.GPJ TERRACON.GDT 5/19/00

LOG OF BORING NO. 4

CLIENT: ALTRA BUILDERS

SITE: 220 EAST 17TH STREET, CHICAGO HEIGHTS, ILLINOIS

PROJECT: RIVERDALE CHEMICAL COMPANY ADDITIONS

Approx. Surface Elev.: 98.5 ft

GRAPHIC LOG	DESCRIPTION	DEPTH, ft	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N ** BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
					PA					
	FILL: SILTY SAND, WITH GRAVEL AND CLAY, TRACE CINDERS, RUBBLES AND BRICKS. ▼			1	ST	4		20.1		
	3 95.5				PA					
	FILL: SANDY, SILTY CLAY, TRACE SAND AND GRAVEL, Brown, Gray and Black			2	SS	8	3	21.8		
	5 ▽ 93.5	5			PA					
	LEAN CLAY, TRACE SAND AND GRAVEL, Brown and Gray, Stiff to Very Stiff		CL	3	SS	18	17	16.2		4500*
					PA					
			CL	4	SS	16	46	19.6		8500*
		10			PA					
			CL	5	SS	18	33	22.9		5000*
		15			PA					
			CL	6	SS	18	33	25.3		4000*
	20 78.5	20								
	BOTTOM OF BORING									

The stratification lines represent the approximate boundary lines between soil and rock types; in-situ, the transition may be gradual.

**140 Lbs Automatic SPT Hammer
*Calibrated Hand Penetrometer

WATER LEVEL OBSERVATIONS, ft				
WL	▽ 5	WD	▼ 2	AB
WL	▽		▽	
WL				

Terracon

BORING STARTED	5-5-00		
BORING COMPLETED	5-5-00		
RIG		FOREMAN	ML
APPROVED	MA	JOB #	11005617

BORE1 11005617.GPJ TERRACON.GDT 5/19/00

LOG OF BORING NO. 3

CLIENT: ALTRA BUILDERS

SITE: 220 EAST 17TH STREET, CHICAGO HEIGHTS, ILLINOIS

PROJECT: RIVERDALE CHEMICAL COMPANY ADDITIONS

Approx. Surface Elev.: 97.5 ft

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N ** BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
	FILL: SANDY, SILTY CLAY, WITH GLASS AND BRICKS, Brown, Gray and Black				PA					
				1	ST	13		24.5	101	
				2	ST	6		18.2		
	5 ▼ 92.5	5								
	LEAN CLAY, TRACE SAND AND ORGANICS, Dark Brown and Gray, Stiff				PA					
			CL	3	ST	19		33.0	85	3000*
	7 90.5							27.3	102	
	LEAN CLAY, TRACE SAND AND GRAVEL, Brown and Gray, Very Stiff				PA					
			CL	4	ST	11		21.4	112	8000*
		10			PA					
			CL	5	SS	18	36	23.3		8000*
	15 82.5	15								
	BOTTOM OF BORING									

The stratification lines represent the approximate boundary lines between soil and rock types; in-situ, the transition may be gradual.

**140 Lbs Automatic SPT Hammer
*Calibrated Hand Penetrometer

WATER LEVEL OBSERVATIONS, ft

WL	▽ 4.5	WD	▽ 5 AB
WL	▽		▽
WL			

Terracon

BORING STARTED	5-5-00		
BORING COMPLETED	5-5-00		
RIG		FOREMAN	ML
APPROVED	MA	JOB #	11005617

BORE1 11005617.GPJ TERRACON.GDT 5/23/00

DATE BEGAN: 10/15/85
DATE FINISHED: 10/15/85
GROUND SURFACE EL: 665.74

BORING NO. SB02

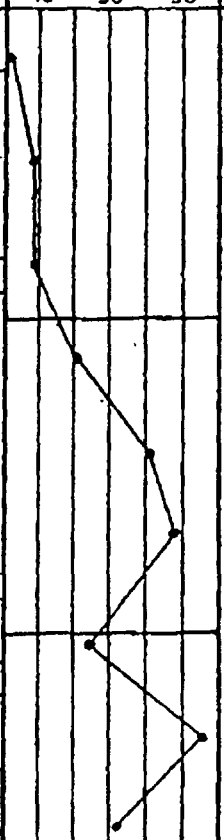
N N/A E N/A

FIELD ENGINEER: M. Hinchey
CHECKED BY: R. Spanbauer

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE	PROFILE	DESCRIPTION	USCS
		01		Soft black silt, highly organic, some brick fragments, moist 1.0	pt
	2.5	02		Soft yellow brown to gray silty clay, mottled, moist	ml-cl
		03		4.0	
	5.0			Loose gray to yellow silty medium grained sand, some gravel, moist 4.5	sm
		04			
	7.5	05		Very stiff to hard yellow brown silty clay, occasional gravel, pieces, mottled, dry	cl
		06		9.0	
	10.0	07		Medium stiff to stiff gray brown silty clay, mottled, moist	cl-ml
		08		Very hard medium gray clay, some silt, occasional gravel pieces, occasional mottling, dry	cl-ch
	12.5				
668.2	13.5	09		13.5	
				Bottom of Boring	

PENETRATION RESISTANCE (BLOWS PER FOOT) 10 30 50

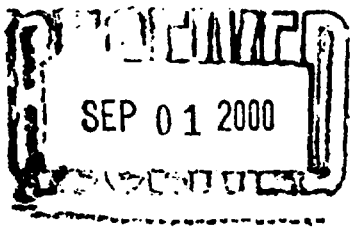
WATER CONTENT (PERCENT) 20 40



PROJECT NO. 850037

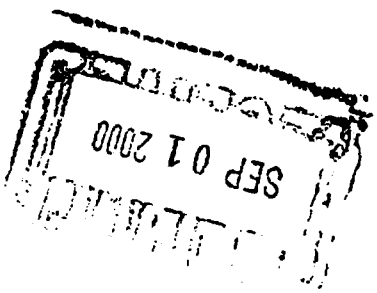
Appendix B
Disposal Characteristics

Committed To *Your* Success



Severn Trent Laboratories
2417 Bond Street
University Park, IL 60466

Tel: (708) 534-5200
Fax: (708) 534-5211
www.stl-inc.com



August 30, 2000

Ms. Rae Mindock
RMT, Inc.
222 South Riverside Plaza, Suite 820
Chicago, IL 60606

RE: Riverdale Chemical
Analytical Report
Job # 9A08G466

Dear Ms. Mindock:

The enclosed analytical report is for the project and lot number listed above. If you have any questions, please contact me at 708-534-5200.

Sincerely,

Severn Trent Laboratories

Eric A. Lang
Project Manager

sj

Enclosures

Severn Trent Laboratories Chicago

GLOSSARY OF DATA QUALIFIERS AND ABBREVIATIONS

Data Qualifiers

B	Compound was found in the blank and the sample
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D
E	Concentration exceeds the instrument calibration range and was subsequently diluted
I	Appears on the "results spreadsheet" to indicate an interference
J	Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)
M	Summary Compound
(M)	Manually integrated compound
N	Positive ID of a TIC that is not quantitated against a standard and must be accompanied by a CAS No.
T	Compound was found in the TCLP extraction blank and the sample
u	Analyte was not detected at or above the reporting limit
X	Result obtained indirectly through calculation based on results from other analyses
Y	The chromatographic response resembles a typical fuel pattern
Z	The chromatographic response does not resemble a typical fuel pattern

Abbreviations

Batch	Designation given to identify a specific extraction, digestion or preparation set (equivalent to prep batch)
BS	Blank spike analysis was conducted on reagent grade water or a matrix free from the analyte of interest
BSD	Blank spike duplicate
BRL	Below reporting limit
CAP	Capillary Column
CD	Calculation factor used by the Laboratory's Information Management System (LIMS)
Contract	Contract laboratory identification code
DF	Dilution factor
DL	Appears in the sample ID to indicate a secondary dilution was performed
LCS/LC	Denotes laboratory control standard
LAB ID	The full 12 character laboratory identification number (equivalent to RFW#)
MB	Method blank or (PB) preparation blank
MS	Matrix spike
MSD	Matrix spike duplicate
NA	Not applicable
NC	Non-calculable precision due to insufficient concentration of analyte present in the sample
NR	Not required
NS	Not spiked
PACK	Packed Column
RE	Appears in the sample ID to indicate a re-analysis
REP	Replicate analysis
Reprep	Sample was reprepared and then reanalyzed
RFW#	The full 12 character laboratory identification number (equivalent to LAB ID)
RFW Lot	The first 8 characters of the RFW#
RPD	Relative percent difference of duplicate (unrounded) analyses
RRF	Relative response factor
RT	Retention time
RTW	Retention time window
SP	Blank spike, blank spike duplicate, matrix spike or matrix spike duplicate
WO#	Work order no. code used to define a specific client, job, phase and task

NOTES:

- One or a combination of these data qualifiers and abbreviations may appear in the analytical report.
- Soil, sediment and sludge results are reported on a dry weight basis except when analyzed for landfill disposal or incineration parameters. All other results on a solid matrix are reported on an "as received" basis unless noted differently.
- Reporting limits are adjusted for preparation sample size, sample dilutions and sample moisture content if analyzed on a dry weight basis.

Severn Trent Laboratories Chicago
INORGANIC ANALYTICAL DATA PACKAGE FOR
RMT-Riverdale Chemical

LABORATORY CHRONICLE

LOT # :9A08G466

CLIENT ID /ANALYSIS	Sample #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
DSL 1							
TCLP	001	S		08/23/00	08/23/00		08/25/00
TCLP VOLATILES	001	S		08/23/00	08/23/00		08/25/00
SILVER, SERIAL DILUT	002 L	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
SILVER, TCLP LEACHAT	002	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
SILVER, TCLP LEACHAT	002 REP	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
SILVER, TCLP LEACHAT	002 MS	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
ARSENIC, SERIAL DILU	002 L	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
ARSENIC, TCLP LEACHA	002	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
ARSENIC, TCLP LEACHA	002 REP	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
ARSENIC, TCLP LEACHA	002 MS	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
BARIUM, SERIAL DILUT	002 L	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
BARIUM, TCLP LEACHAT	002	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
BARIUM, TCLP LEACHAT	002 REP	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
BARIUM, TCLP LEACHAT	002 MS	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CADMIUM, SERIAL DILU	002 L	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CADMIUM, TCLP LEACHA	002	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CADMIUM, TCLP LEACHA	002 REP	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CADMIUM, TCLP LEACHA	002 MS	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CHROMIUM, SERIAL DIL	002 L	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CHROMIUM, TCLP LEACH	002	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CHROMIUM, TCLP LEACH	002 REP	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CHROMIUM, TCLP LEACH	002 MS	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
MERCURY, TCLP LEACHA	002	W	9AHG172	08/23/00	08/23/00	08/28/00	08/28/00
MERCURY, TCLP LEACHA	002 REP	W	9AHG172	08/23/00	08/23/00	08/28/00	08/28/00
MERCURY, TCLP LEACHA	002 MS	W	9AHG172	08/23/00	08/23/00	08/28/00	08/28/00
LEAD, SERIAL DILUTIO	002 L	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
LEAD, TCLP LEACHATE	002	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
LEAD, TCLP LEACHATE	002 REP	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
LEAD, TCLP LEACHATE	002 MS	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
SELENIUM, SERIAL DIL	002 L	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
SELENIUM, TCLP LEACH	002	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
SELENIUM, TCLP LEACH	002 REP	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
SELENIUM, TCLP LEACH	002 MS	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
DSL 2							
TCLP	004	S		08/23/00	08/23/00		08/25/00

NY CERTIFICATION # 11006

Severn Trent Laboratories Chicago
INORGANIC ANALYTICAL DATA PACKAGE FOR
RMT-Riverdale Chemical

LABORATORY CHRONICLE

LOT # :9A08G466

CLIENT ID /ANALYSIS	Sample #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
TCLP VOLATILES	004	S		08/23/00	08/23/00		08/25/00
SILVER, TCLP LEACHAT	005	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
ARSENIC, TCLP LEACHA	005	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
BARIUM, TCLP LEACHAT	005	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CADMIUM, TCLP LEACHA	005	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
CHROMIUM, TCLP LEACH	005	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
MERCURY, TCLP LEACHA	005	W	9AHG172	08/23/00	08/23/00	08/28/00	08/28/00
LEAD, TCLP LEACHATE	005	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00
SELENIUM, TCLP LEACH	005	W	9AGE0154	08/23/00	08/23/00	08/25/00	08/28/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
ARSENIC LABORATORY	LC1 BS	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
BARIUM LABORATORY	LC1 BS	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
CADMIUM LABORATORY	LC1 BS	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
CHROMIUM LABORATORY	LC1 BS	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
LEAD LABORATORY	LC1 BS	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
SELENIUM LABORATORY	LC1 BS	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
SILVER, TCLP LEACHAT	MB2	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
ARSENIC, TCLP LEACHA	MB2	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
BARIUM, TCLP LEACHAT	MB2	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
CADMIUM, TCLP LEACHA	MB2	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
CHROMIUM, TCLP LEACH	MB2	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
LEAD, TCLP LEACHATE	MB2	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
SELENIUM, TCLP LEACH	MB2	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
SILVER, TCLP LEACHAT	MB3	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
ARSENIC, TCLP LEACHA	MB3	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
BARIUM, TCLP LEACHAT	MB3	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
CADMIUM, TCLP LEACHA	MB3	W	9AGE0154	N/A	N/A	08/25/00	08/28/00

NY CERTIFICATION # 11006

Severn Trent Laboratories Chicago
INORGANIC ANALYTICAL DATA PACKAGE FOR
RMT-Riverdale Chemical

LABORATORY CHRONICLE

LOT # :9A08G466

CLIENT ID /ANALYSIS	Sample #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
CHROMIUM, TCLP LEACH	MB3	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
LEAD, TCLP LEACHATE	MB3	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
SELENIUM, TCLP LEACH	MB3	W	9AGE0154	N/A	N/A	08/25/00	08/28/00
MERCURY LABORATORY	LC1 BS	W	9AHG172	N/A	N/A	08/28/00	08/28/00
MERCURY, TOTAL	MB1	W	9AHG172	N/A	N/A	08/28/00	08/28/00
MERCURY, TCLP LEACHA	MB2	W	9AHG172	N/A	N/A	08/28/00	08/28/00
MERCURY, TCLP LEACHA	MB3	W	9AHG172	N/A	N/A	08/28/00	08/28/00

SIGNATURE [signature] DATE 8/30/00

NY CERTIFICATION # 11006

Severn Trent Laboratories Chicago
METALS METHOD REFERENCE

The following methods are used as reference for the analysis of samples contained with this RFW Lot: 9A0804G6

SW846	__6010A ✓__6010B ✓__Ag __Al ✓__As __B ✓__Ba __Be __Ca ✓__Cd __Co ✓__Cr __Cu __Fe __K __Li __Mg __Mn __Mo __Na __Ni __P ✓__Pb __Sb ✓__Se __Si __Sn __Sr __Ti __Tl __V __Zn __Ag7761 __As7060A __Cd7131A __Cr7191 __Cu7211 ✓__Hg7470A __Hg7471A __Pb7421 __Sb7041 __Se7740 __Tl7841 __CN 9010A __CN 9010B/9014
EPA	**200.7** __Ag __Al __As __B __Ba __Be __Ca __Cd __Co __Cr __Cu __Fe __K __Li __Mg __Mn __Mo __Na __Ni __P __Pb __Sb __Se __Si __Sn __Sr __Ti __Tl __V __Zn __Ag272.2 __As206.2 __Cd213.2 __Cr218.2 __Cu220.2 __Hg245.1 __Hg245.5 __Pb239.2 __Sb204.2 __Se270.2 __Tl279.2 **200.9** __As __Cd __Pb __Sb __Se __Tl
CLP **ILM04.0**	**200.7 CLP-M** __Ag __Al __As __B __Ba __Be __Ca __Cd __Co __Cr __Cu __Fe __K __Li __Mg __Mn __Mo __Na __Ni __P __Pb __Sb __Se __Si __Sn __Sr __Ti __Tl __V __Zn __As206.2 __Cd213.2 __Hg245.1 __Hg245.5 __Pb239.2 __Sb204.2 __Se270.2 __Tl279.2 __CN335.2
Digestion Method	**SW846** __3005A ✓__3010A __3020A __3020A(+H_2O_2) __3050A __7060A/7740 ✓__7470A __7471A __3050B **EPA** __200.7 __200.0(+H_2O_2) __200.9(-HCL;+H_2O_2) **USEPA/CLP** __ILM04.0 Exhibit D, Section III
Extraction Method	**SW846** __1311TCLP __1312SPLP __1320MEP Using TCLP **ASTM** **CAM Title 22** __D3987 Neutral Leach __W.E.T.
%Solids	__SM 2540G __ASTM D2216 __Exhibit D Part F

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Wednesday August 30th, 2000

RE: DSL 1
Project # 00000-000-000-0000
Lab ID: 9A08G466-002
Sample Date: 08/23/00
Date Received: 08/23/00

TCLP Leachate Analysis Report

Parameters	Result		Units	Reporting Limit
Silver, TCLP	0.050	u	mg/L	0.050
Arsenic, TCLP	0.10	u	mg/L	0.10
Barium, TCLP	1.0	u	mg/L	1.0
Cadmium, TCLP	0.050	u	mg/L	0.050
Chromium, TCLP	0.050	u	mg/L	0.050
Mercury, TCLP	0.0020	u	mg/L	0.0020
Lead, TCLP	0.050	u	mg/L	0.050
Selenium, TCLP	0.10	u	mg/L	0.10

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Wednesday August 30th, 2000

RE: DSL 2
Project # 00000-000-000-0000
Lab ID: 9A08G466-005
Sample Date: 08/23/00
Date Received: 08/23/00

TCLP Leachate Analysis Report

Parameters	Result		Units	Reporting Limit
Silver, TCLP	0.050	u	mg/L	0.050
Arsenic, TCLP	0.10	u	mg/L	0.10
Barium, TCLP	1.0	u	mg/L	1.0
Cadmium, TCLP	0.050	u	mg/L	0.050
Chromium, TCLP	0.050	u	mg/L	0.050
Mercury, TCLP	0.0020	u	mg/L	0.0020
Lead, TCLP	0.050	u	mg/L	0.050
Selenium, TCLP	0.10	u	mg/L	0.10

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Wednesday August 30th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 2	9AGE0154-MB2	Silver, TCLP	0.050	u	mg/L	0.050
		Arsenic, TCLP	0.10	u	mg/L	0.10
		Barium, TCLP	1.0	u	mg/L	1.0
		Cadmium, TCLP	0.050	u	mg/L	0.050
		Chromium, TCLP	0.050	u	mg/L	0.050
		Lead, TCLP	0.050	u	mg/L	0.050
		Selenium, TCLP	0.10	u	mg/L	0.10
Blank 3	9AGE0154-MB3	Silver, TCLP	0.050	u	mg/L	0.050
		Arsenic, TCLP	0.10	u	mg/L	0.10
		Barium, TCLP	1.0	u	mg/L	1.0

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Wednesday August 30th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 3	9AGE0154-MB3	Cadmium, TCLP	0.050	u	mg/L	0.050
		Chromium, TCLP	0.050	u	mg/L	0.050
		Lead, TCLP	0.050	u	mg/L	0.050
		Selenium, TCLP	0.10	u	mg/L	0.10
Blank 1	9AHG172-MB1	Mercury, Total	0.00020	u	mg/L	0.00020
Blank 2	9AHG172-MB2	Mercury, TCLP	0.0020	u	mg/L	0.0020
Blank 3	9AHG172-MB3	Mercury, TCLP	0.0020	u	mg/L	0.0020

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Wednesday August 30th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Precision Data Report

Sample Site ID	Parameter	Initial Result	Replicate	RPD
-002REP DSL 1	Silver, Leachate	0.050 u	0.050 u	NC
	Arsenic, Leachate	0.10 u	0.10 u	NC
	Barium, Leachate	1.0 u	1.0 u	NC
	Cadmium, Leachate	0.050 u	0.050 u	NC
	Chromium, Leachate	0.050 u	0.050 u	NC
	Mercury, Leachate	0.0020 u	0.0020 u	NC
	Lead, Leachate	0.050 u	0.050 u	NC
	Selenium, Leachate	0.10 u	0.10 u	NC

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Wednesday August 30th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Accuracy Data Report

Sample	Site ID	Parameter	Spiked Sample	Initial Result		Spiked Amount	% Recov
-002	DSL 1	Silver, Leachate	0.99	0.050	u	1.0	98.8
		Arsenic, Leachate	5.1	0.10	u	5.0	101
		Barium, Leachate	100	1.0	u	100	100
		Cadmium, Leachate	0.99	0.050	u	1.0	99.2
		Chromium, Leachate	5.0	0.050	u	5.0	100
		Mercury, Leachate	0.15	0.0020	u	0.20	74.7
		Lead, Leachate	5.0	0.050	u	5.0	99.4
		Selenium, Leachate	1.1	0.10	u	1.0	108

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Wednesday August 30th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
9AGE0154-LC1	Silver, LCS	0.050	mg/L	104	NA	NA
	Arsenic, LCS	2.0	mg/L	104	NA	NA
	Barium, LCS	2.0	mg/L	105	NA	NA
	Cadmium, LCS	0.050	mg/L	101	NA	NA
	Chromium, LCS	0.20	mg/L	108	NA	NA
	Lead, LCS	0.50	mg/L	108	NA	NA
	Selenium, LCS	2.0	mg/L	107	NA	NA
9AHG172-LC1	Mercury, LCS	0.0020	mg/L	102	NA	NA

Severn Trent Laboratories Chicago
826T ANALYTICAL DATA PACKAGE FOR
RMT-Riverdale Chemical

LABORATORY CHRONICLE

LOT # :9A08G466

CLIENT ID	Sample #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
DSL 1	003	W	80GVG156	08/23/00	08/23/00	N/A	08/25/00
DSL 1	003 MS	W	80GVG156	08/23/00	08/23/00	N/A	08/25/00
DSL 2	006	W	80GVG156	08/23/00	08/23/00	N/A	08/26/00
LAB QC:							
VBLKBF	917	W	80GVG156	N/A	N/A	N/A	08/25/00
VBLKAR	MB1	W	80GVG156	N/A	N/A	N/A	08/25/00
VBLKAR	MB1 BS	W	80GVG156	N/A	N/A	N/A	08/25/00

SIGNATURE Gregory L. Hoerl DATE 8/29/00

NY CERTIFICATION # 11006

Severn Trent Laboratories Chicago

GC/MS METHOD REFERENCE

The following methods are used as reference for the analysis of samples contained within this RFW Lot :

GC/MS VOLATILES	____ SW-846 8260A
	✓ SW-846 8260B
	____ EPA 524.2
	____ 40 CFR Part 136, Method 624
	____ CLP OLM03.1/3.2
	____ OLC02.0/2.1
GC/MS SEMIVOLATILES	____ SW-846 8270A
	____ SW-846 8270B
	____ SW-846 8270C
	____ 40 CFR Part 136, Method 625
	____ CLP OLM03.1/3.2
	____ OLC02.0/2.1

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Tuesday August 29th, 2000

RE: DSL 1
Project # 00000-000-000-0000
Lab ID: 9A08G466-003
Sample Date: 08/23/00
Date Received: 08/23/00
Units: ug/L

METHOD 8260 VOLATILES TCLP

Volatile Compound	Result	Reporting Limit	Flag
Vinyl chloride	BRL	100	U
1,1-Dichloroethene	BRL	100	U
2-Butanone	BRL	100	U
Chloroform	BRL	100	U
Carbon Tetrachloride	BRL	100	U
Benzene	BRL	100	U
1,2-Dichloroethane	BRL	100	U
Trichloroethene	BRL	100	U
Tetrachloroethene	BRL	100	U
Chlorobenzene	BRL	100	U

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Tuesday August 29th, 2000

RE: DSL 2
Project # 00000-000-000-0000
Lab ID: 9A08G466-006
Sample Date: 08/23/00
Date Received: 08/23/00
Units: ug/L

METHOD 8260 VOLATILES TCLP

Volatile Compound	Result	Reporting Limit	Flag
Vinyl chloride	BRL	100	U
1,1-Dichloroethene	BRL	100	U
2-Butanone	BRL	100	U
Chloroform	BRL	100	U
Carbon Tetrachloride	BRL	100	U
Benzene	BRL	100	U
1,2-Dichloroethane	BRL	100	U
Trichloroethene	BRL	100	U
Tetrachloroethene	BRL	100	U
Chlorobenzene	BRL	100	U

STL Chicago
METHOD 8260 VOLATILES TCLP

RFW Batch Number: 9A08G466 Client: RMT-Riverdale Chemical Work Order: 00000-000-000-0 Report Date: 08/29/00 12:22 Page: 1a

	Cust ID:	DSL 1	DSL 1	DSL 2	VBLKBF	VBLKAR	VBLKAR BS
Sample Information	RFW#:	003	003 MS	006	80GVG156-917	80GVG156-MB1	80GVG156-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	20	20	20	20	1	1
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	1,2-Dichloroethane-d4	103 %	105 %	99 %	93 %	99 %	94 %
	Toluene-d8	104 %	106 %	99 %	88 %	102 %	98 %
	4-Bromofluorobenzene	99 %	104 %	96 %	86 %	99 %	94 %
	Dibromofluoromethane	92 %	94 %	86 %	80 %	89 %	84 %
		fl	fl	fl	fl	fl	fl
Vinyl chloride		100 U	87 %	100 U	100 U	5 U	85 %
1,1-Dichloroethene		100 U	85 %	100 U	100 U	5 U	97 %
2-Butanone		100 U	83 %	100 U	100 U	5 U	91 %
Chloroform		100 U	88 %	100 U	100 U	5 U	99 %
Carbon Tetrachloride		100 U	98 %	100 U	100 U	5 U	116 %
Benzene		100 U	94 %	100 U	100 U	5 U	108 %
1,2-Dichloroethane		100 U	98 %	100 U	100 U	5 U	113 %
Trichloroethene		100 U	101 %	100 U	100 U	5 U	120 %
Tetrachloroethene		100 U	101 %	100 U	100 U	5 U	120 %
Chlorobenzene		100 U	95 %	100 U	100 U	5 U	111 %

*= Outside of EPA CLP QC limits.

DSY 8/29/00

Severn Trent Laboratories Chicago
BNA ANALYTICAL DATA PACKAGE FOR
RMT-Riverdale Chemical

LABORATORY CHRONICLE

LOT # :9A08G466

CLIENT ID	Sample #	MTX	PREP #	COLLECTN DATE	REC EXT/PREP	ANALYSIS
DSL 1	002	W	9AGB0415	08/23/00	08/23/00 08/28/00	08/29/00
DSL 1	002 MS	W	9AGB0413	08/23/00	08/23/00 08/25/00	08/28/00
DSL 2	005	W	9AGB0413	08/23/00	08/23/00 08/25/00	08/28/00
LAB QC:						
SBLKXM	MB1	W	9AGB0415	N/A	N/A 08/28/00	08/29/00
SBLKXM	MB1 BS	W	9AGB0415	N/A	N/A 08/28/00	08/29/00
SBLKXH	MB1	W	9AGB0413	N/A	N/A 08/25/00	08/28/00
SBLKXH	MB1 BS	W	9AGB0413	N/A	N/A 08/25/00	08/28/00
SBLKXI	TC1	W	9AGB0413	N/A	N/A 08/25/00	08/28/00
SBLKXJ	TC2	W	9AGB0413	N/A	N/A 08/25/00	08/28/00

SIGNATURE Gregory F. Lovell DATE 8/29/00

NY CERTIFICATION # 11006

Severn Trent Laboratories - Chicago
GC/MS BNA Case Narrative

RMT-Riverdale Chemical
STL# 9A08G466
BNA DATA: TCLP

1. The TCLP extraction, organic extraction, and all analyses were performed within recommended hold times.

2. The Method Blank and the TCLP Blanks had all analytes below the reporting limits.

3. The LCS (Method Blank Spike) samples were 9AGB0413-MB1 BS and 9AGB0415-MB1 BS. A full list BNA spike solution was used (100 µg/mL), and 1.0 mL was spiked in the LCS samples. In-house statistical recovery limits were used and the compounds specified in the method were used for QC evaluation. All spike recoveries for the specified compounds were within QC limits.

4. The Matrix Spike sample was 9A08G466-002 MS. A full list BNA spike solution was used (100 µg/mL), and 1.0 mL was spiked in the Matrix Spike sample. In-house statistical recovery limits were used and the compounds specified in the method were used for QC evaluation. All spike recoveries for the specified compounds were within QC limits.

5. The sample 9A08G466-002, 9AGB0413-MB1 BS, and 9AGB0415-MB1 BS had one surrogate recovery below the QC limits; but greater than ten percent. Corrective action was not required. The TCLP Blank 9AGB0413-TC1 had two surrogates below the QC limits; but greater than ten percent. Corrective action was not required. The TCLP Blank 9AGB0413-TC2 had three surrogates above the QC limits. Corrective action was not required. The Method Blank 9AGB0413-MB1 had one surrogate above the QC limit. Corrective action was not required. All of the other samples in this analytical batch had surrogates within in-house generated QC limits.

6. All analyses were performed following USEPA SW846 method 8270C protocol. All of the internal standard and surrogate peaks have been labeled by name. All of the samples had internal standard areas and retention times within acceptance limits as compared to the corresponding continuing calibration standard.

7. The samples and the TCLP Blanks were extracted using 100 mL of the TCLP leachate. The Method Blank and the LCS sample were extracted using 1000 mL of deionized water. All of the samples were analyzed without dilution. The results and reporting limits were adjusted to account for the extraction volume.

Gary Rynkar
GC/MS BNA Unit Leader

8/29/00
Date

Severn Trent Laboratories Chicago

GC/MS METHOD REFERENCE

The following methods are used as reference for the analysis of samples contained within this RFW Lot :

GC/MS VOLATILES	____ SW-846 8260A
	____ SW-846 8260B
	____ EPA 524.2
	____ 40 CFR Part 136, Method 624
	____ CLP OLM03.1/3.2
	____ OLC02.0/2.1
GC/MS SEMIVOLATILES	____ SW-846 8270A
	____ SW-846 8270B
	✓ SW-846 8270C
	____ 40 CFR Part 136, Method 625
	____ CLP OLM03.1/3.2
	____ OLC02.0/2.1

CHI-22-05-001/E-1/99

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Tuesday August 29th, 2000

RE: DSL 2
Project # 00000-000-000-0000
Lab ID: 9A08G466-005
Sample Date: 08/23/00
Date Received: 08/23/00
Units: ug/L

SEMIVOLATILES BY GC/MS, TCLP LEACHATE

Semivolatile Compound	Result	Reporting Limit	Flag
Pyridine	BRL	200	U
1,4-Dichlorobenzene	BRL	100	U
o-Cresol	BRL	100	U
meta & para-Cresol	BRL	100	U
Hexachloroethane	BRL	100	U
Nitrobenzene	BRL	100	U
Hexachlorobutadiene	BRL	100	U
2,4,6-Trichlorophenol	BRL	100	U
2,4,5-Trichlorophenol	BRL	500	U
2,4-Dinitrotoluene	BRL	100	U
Hexachlorobenzene	BRL	100	U
Pentachlorophenol	BRL	500	U

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Tuesday August 29th, 2000

RE: DSL 1
Project # 00000-000-000-0000
Lab ID: 9A08G466-002
Sample Date: 08/23/00
Date Received: 08/23/00
Units: ug/L

SEMIVOLATILES BY GC/MS, TCLP LEACHATE

Semivolatile Compound	Result	Reporting Limit	Flag
Pyridine	BRL	200	U
1,4-Dichlorobenzene	BRL	100	U
o-Cresol	BRL	100	U
meta & para-Cresol	BRL	100	U
Hexachloroethane	BRL	100	U
Nitrobenzene	BRL	100	U
Hexachlorobutadiene	BRL	100	U
2,4,6-Trichlorophenol	BRL	100	U
2,4,5-Trichlorophenol	BRL	500	U
2,4-Dinitrotoluene	BRL	100	U
Hexachlorobenzene	BRL	100	U
Pentachlorophenol	BRL	500	U

STL Chicago

SEMIVOLATILES BY GC/MS, TCLP LEACHATE

Report Date: 08/29/00 13:38

RFW Batch Number: 9A08G466 Client: RMT-Riverdale Chemical Work Order: 00000-000-000-0 Page: 1a

	Cust ID:	DSL 1	DSL 1	DSL 2	SBLKXM	SBLKXM BS	SBLKXH
Sample Information	RFW#:	002	002 MS	005	9AGB0415-MB1	9AGB0415-MB1	9AGB0413-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1	1	1	1	1	1
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	2-Fluorophenol	23 %	26 %	22 %	26 %	23 %	26 %
	Phenol-d5	12 * %	18 %	18 %	19 %	17 * %	19 %
	Nitrobenzene-d5	77 %	81 %	79 %	85 %	76 %	80 %
	2-Fluorobiphenyl	89 %	85 %	74 %	95 %	87 %	83 %
	2,4,6-Tribromophenol	39 %	57 %	43 %	42 %	57 %	33 %
	p-Terphenyl-d14	102 %	103 %	101 %	103 %	99 %	127 * %
Pyridine		200 U	43 %	200 U	20 U	18 %	20 U
1,4-Dichlorobenzene		100 U	60 %	100 U	10 U	68 %	10 U
o-Cresol		100 U	72 %	100 U	10 U	69 %	10 U
meta & para-Cresol		100 U	69 %	100 U	10 U	60 %	10 U
Hexachloroethane		100 U	48 %	100 U	10 U	57 %	10 U
Nitrobenzene		100 U	74 %	100 U	10 U	69 %	10 U
Hexachlorobutadiene		100 U	62 %	100 U	10 U	75 %	10 U
2,4,6-Trichlorophenol		100 U	84 %	100 U	10 U	78 %	10 U
2,4,5-Trichlorophenol		500 U	96 %	500 U	50 U	87 %	50 U
2,4-Dinitrotoluene		100 U	99 %	100 U	10 U	95 %	10 U
Hexachlorobenzene		100 U	102 %	100 U	10 U	96 %	10 U
Pentachlorophenol		500 U	78 %	500 U	50 U	75 %	50 U

*= Outside of EPA CLP QC limits.

STL Chicago
SEMIVOLATILES BY GC/MS, TCLP LEACHATE

RFW Batch Number: 9A08G466 Client: RMT-Riverdale Chemical Work Order: 00000-000-000-0 Report Date: 08/29/00 13:38 Page: 2a

		Cust ID:	SBLKXH BS		SBLKXI		SBLKXJ						
Sample Information		RFW#:	9AGB0413-MB1		9AGB0413-TC1		9AGB0413-TC2						
		Matrix:	WATER		WATER		WATER						
		D.F.:	1		1		1						
		Units:	ug/L		ug/L		ug/L						
	2-Fluorophenol		22	%	21	%	38	%					
Surrogate Recovery	Phenol-d5		16 *	%	15 *	%	23	%					
	Nitrobenzene-d5		78	%	68	%	126 *	%					
	2-Fluorobiphenyl		84	%	66	%	123 *	%					
	2,4,6-Tribromophenol		58	%	26 *	%	51	%					
	p-Terphenyl-d14		105	%	108	%	185 *	%					
Pyridine			35	%	200	U	200	U					
1,4-Dichlorobenzene			60	%	100	U	100	U					
o-Cresol			69	%	100	U	100	U					
meta & para-Cresol			61	%	100	U	100	U					
Hexachloroethane			46	%	100	U	100	U					
Nitrobenzene			73	%	100	U	100	U					
Hexachlorobutadiene			60	%	100	U	100	U					
2,4,6-Trichlorophenol			83	%	100	U	100	U					
2,4,5-Trichlorophenol			94	%	500	U	500	U					
2,4-Dinitrotoluene			100	%	100	U	100	U					
Hexachlorobenzene			94	%	100	U	100	U					
Pentachlorophenol			70	%	500	U	500	U					

*= Outside of EPA CLP QC limits.

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Severn Trent Laboratories Chicago
PEST/PCB ANALYTICAL DATA PACKAGE FOR
RMT-Riverdale Chemical

LABORATORY CHRONICLE

LOT # :9A08G466

CLIENT ID	Sample #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
DSL 1	002	W	9AGP0726	08/23/00	08/23/00	08/25/00	08/28/00
DSL 2	005	W	9AGP0726	08/23/00	08/23/00	08/25/00	08/28/00
DSL 2	005 MS	W	9AGP0726	08/23/00	08/23/00	08/25/00	08/28/00
LAB QC:							
PBLKKZ	MB1	W	9AGP0726	N/A	N/A	08/25/00	08/28/00
PBLKKZ	MB1 BS	W	9AGP0726	N/A	N/A	08/25/00	08/28/00
PBLKLA	TC1	W	9AGP0726	N/A	N/A	08/25/00	08/28/00
PBLKLB	TC2	W	9AGP0726	N/A	N/A	08/25/00	08/28/00

SIGNATURE Trish L Mueller DATE 8-30-00

NY CERTIFICATION # 11006

Severn Trent Laboratories Chicago
GC/HPLC METHOD REFERENCE

The following methods are used as reference for the analysis of samples contained within this RFW Lot :

Pesticides/PCBs	____ SW-846 8080A ____ SW-846 8081 ____ 40 CFR Part 136, Method 608 ____ OLM03.1/3.2
Pesticides	✓ SW-846 8081A
PCBs	____ SW-846 8082
Organophosphorus Pesticides	____ SW-846 8141A
Herbicides	____ SW-846 8150B ____ SW-846 8151A
Explosives	____ SW-846 8330
Polynuclear Aromatics	____ SW-846 8310 ____ 40 CFR Part 136, Method 610
Petroleum Hydrocarbons	____ SW-846 8015B Mod ____ California LUFT ____ Other _____
EDB & DBCP	____ EPA Method 504.1 ____ SW-846 8011
GC VOLATILES	____ SW-846 8020A ____ SW-846 8021B ____ 40 CFR Part 136, Method 602 ____ SW-846 8015 Mod

CHI-22-05-003/I-8/99

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Tuesday August 29th, 2000

RE: DSL 1
Project # 00000-000-000-0000
Lab ID: 9A08G466-002
Sample Date: 08/23/00
Date Received: 08/23/00
Units: UG/L

PESTICIDES BY GC, TCLP LEACHATE

Compound	Result	Reporting Limit	Flag
gamma-BHC (Lindane)	BRL	2.5	U
Heptachlor	BRL	2.5	U
Heptachlor epoxide	BRL	2.5	U
Chlordane	BRL	10	U
Endrin	BRL	5.0	U
Methoxychlor	BRL	25	U
Toxaphene	BRL	50	U

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Tuesday August 29th, 2000

RE: DSL 2
Project # 00000-000-000-0000
Lab ID: 9A08G466-005
Sample Date: 08/23/00
Date Received: 08/23/00
Units: UG/L

PESTICIDES BY GC, TCLP LEACHATE

Compound	Result	Reporting Limit	Flag
gamma-BHC (Lindane)	6.0	2.5	
Heptachlor	BRL	2.5	U
Heptachlor epoxide	BRL	2.5	U
Chlordane	BRL	10	U
Endrin	BRL	5.0	U
Methoxychlor	BRL	25	U
Toxaphene	BRL	50	U

STL Chicago
PESTICIDES BY GC, TCLP LEACHATE
Report Date: 08/29/00 09:03

RFW Batch Number: 9A08G466 Client: RMT-Riverdale Chemical Work Order: 00000-000-000-0 Page: 1

	Cust ID:	DSL 1	DSL 2	DSL 2	PBLKKZ	PBLKKZ BS	PBLKLA
Sample Information	RFW#:	002	005	005 MS	9AGP0726-MB1	9AGP0726-MB1	9AGP0726-TC1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	10	10	10	10	10	10
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate: Tetrachloro-m-xylene		75 %	78 %	85 %	70 %	78 %	78 %
Decachlorobiphenyl		98 %	90 %	90 %	92 %	85 %	92 %
gamma-BHC (Lindane)		2.5 U	6.0	100 %	0.25 U	100 %	2.5 U
Heptachlor		2.5 U	2.5 U	80 %	0.25 U	70 %	2.5 U
Heptachlor epoxide		2.5 U	2.5 U	90 %	0.25 U	90 %	2.5 U
Chlordane		10 U	10 U	90 %	1.0 U	90 %	10 U
Endrin		5.0 U	5.0 U	100 %	0.50 U	90 %	5.0 U
Methoxychlor		25 U	25 U	90 %	2.5 U	84 %	25 U
Toxaphene		50 U	50 U	116 %	5.0 U	107 %	50 U

	Cust ID:	PBLKLB
Sample Information	RFW#:	9AGP0726-TC2
	Matrix:	WATER
	D.F.:	10
	Units:	ug/L
Surrogate: Tetrachloro-m-xylene		82 %
Decachlorobiphenyl		92 %
gamma-BHC (Lindane)		2.5 U
Heptachlor		2.5 U
Heptachlor epoxide		2.5 U
Chlordane		10 U
Endrin		5.0 U
Methoxychlor		25 U
Toxaphene		50 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Severn Trent Laboratories Chicago
HBGT ANALYTICAL DATA PACKAGE FOR
RMT-Riverdale Chemical

LABORATORY CHRONICLE

LOT # :9A08G466

CLIENT ID	Sample #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
DSL 1	002	W	9AGP0727	08/23/00	08/23/00	08/25/00	08/29/00
DSL 1	002 MS	W	9AGP0727	08/23/00	08/23/00	08/25/00	08/29/00
DSL 2	005	W	9AGP0727	08/23/00	08/23/00	08/25/00	08/29/00
LAB QC:							
PBLKLC	MB1	W	9AGP0727	N/A	N/A	08/25/00	08/29/00
PBLKLC	MB1 BS	W	9AGP0727	N/A	N/A	08/25/00	08/29/00
PBLKLD	TC1	W	9AGP0727	N/A	N/A	08/25/00	08/29/00
PBLKLE	TC2	W	9AGP0727	N/A	N/A	08/25/00	08/29/00

SIGNATURE Linda L Mackley DATE 8.30.00

NY CERTIFICATION # 11006

Severn Trent Laboratories Chicago
GC/HPLC METHOD REFERENCE

The following methods are used as reference for the analysis of samples contained within this RFW Lot :

Pesticides/PCBs	____ SW-846 8080A ____ SW-846 8081 ____ 40 CFR Part 136, Method 608 ____ OLM03.1/3.2
Pesticides	____ SW-846 8081A
PCBs	____ SW-846 8082
Organophosphorus Pesticides	____ SW-846 8141A
Herbicides	____ SW-846 8150B __/__ SW-846 8151A
Explosives	____ SW-846 8330
Polynuclear Aromatics	____ SW-846 8310 ____ 40 CFR Part 136, Method 610
Petroleum Hydrocarbons	____ SW-846 8015B Mod ____ California LUFT ____ Other _____
EDB & DBCP	____ EPA Method 504.1 ____ SW-846 8011
GC VOLATILES	____ SW-846 8020A ____ SW-846 8021B ____ 40 CFR Part 136, Method 602 ____ SW-846 8015 Mod

CHI-22-05-003/I-8/99

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Tuesday August 29th, 2000

RE: DSL 1
Project # 00000-000-000-0000
Lab ID: 9A08G466-002
Sample Date: 08/23/00
Date Received: 08/23/00
Units: UG/L

HERBICIDES BY GC, TCLP LEACHATE

Compound	Result	Reporting Limit	Flag
2,4-D	BRL	100	U
2,4,5-TP (Silvex)	BRL	10	U

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Heather Sues

Date: Tuesday August 29th, 2000

RE: DSL 2
Project # 00000-000-000-0000
Lab ID: 9A08G466-005
Sample Date: 08/23/00
Date Received: 08/23/00
Units: UG/L

HERBICIDES BY GC, TCLP LEACHATE

Compound	Result	Reporting Limit	Flag
2,4-D	840	100	
2,4,5-TP (Silvex)	BRL	10	U

STL Chicago
HERBICIDES BY GC, TCLP LEACHATE

RFW Batch Number: 9A08G466 Client: RMT-Riverdale Chemical Work Order: 00000-000-000-0 Report Date: 08/29/00 09:32 Page: 1

	Cust ID:	DSL 1	DSL 1	DSL 2	PBLKLC	PBLKLC BS	PBLKLD
Sample Information	RFW#:	002	002 MS	005	9AGP0727-MB1	9AGP0727-MB1	9AGP0727-TC1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	10	10	10	10	10	10
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate: DCAA		108 %	118 %	101 %	108 %	106 %	101 %
2,4-D		100 U	86 %	840	10 U	81 %	100 U
2,4,5-TP (Silvex)		10 U	116 %	10 U	1.0 U	108 %	10 U

	Cust ID:	PBLKLE
Sample Information	RFW#:	9AGP0727-TC2
	Matrix:	WATER
	D.F.:	10
	Units:	ug/L
Surrogate: DCAA		70 %
2,4-D		100 U
2,4,5-TP (Silvex)		10 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Chain of Custody Record

Quanterra

QUA-4124 0797

Client	Project Manager	Date	Chain of Custody Number
RMT			44734
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 1
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	**Analysis (Attach list if more space is needed)**
Project Name	**Carrier/Waybill Number**		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/ NaOH
					X						
					X						

Special Instructions/ Conditions of Receipt

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal

☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

(A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
				3/23/00	11 35
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

STM. 1 STC.

fax: 8/30/00
HC: 9/1/00

74086466

Chain of Custody Record

Quanterra

QUA-4124 0797

Client	Project Manager	Date	Chain of Custody Number
RMT	Rax Mindock	8/23/00	44734
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
222 S. Riverside Plaza Suite 820	(312) 575-0200		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	**Analysis (Attach list if more space is needed)**
Chicago / IL / 60606	YARDS / SEWS	ERIC LANG	
Project Name	**Carrier/Waybill Number**		
Riverdale	HAND DELIVERED		
Contract/Purchase Order/Quote No.			
Bill to RMT c/o Rax Mindock			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed.	Soil	Containers & Preservatives: Unpres	H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	TCLP VOA	TCLP Semi-VOA	TCLP Pest/Herb	TCLP Metals	Special Instructions/ Conditions of Receipt
DSL 1	8/23/00	13:30			X							X	X	X	X	
DSL 2	8/23/00	13:45			X							X	X	X	X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Beatrice Lees	8/23/00	4:35	1. Received By	8/23/00	1635
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

SEVERN TRENT SERVICES

STL Chicago
2417 Bond Street
University Park, IL 60466

Tel: 708 534 5200
Fax: 708 534 5211
www.stl-inc.com

September 11, 2000

Ms. Rae Mindock
RMT, Inc.
222 South Riverside Plaza, Suite 820
Chicago, IL 60606

RE: Riverdale Chemical
Additional Wet Chemistry Data
Job # 9A08G466

Dear Ms. Mindock:

The enclosed revised analytical report is for the project and lot number listed above. As requested, Wet Chemistry parameters have been added. If you have any questions, please contact me at 708-534-5200.

Sincerely,

Severn Trent Laboratories

Eric A. Lang
Project Manager

sj

Enclosures

Severn Trent Laboratories Chicago
INORGANIC ANALYTICAL DATA PACKAGE FOR
RMT-Riverdale Chemical

LABORATORY CHRONICLE

LOT # :9A08G466

CLIENT ID /ANALYSIS	Sample #	MTX	PREP #	COLLECTN DATE	REC EXT/PREP	ANALYSIS
DSL 1						
REACTIVE CYANIDE	001	S	80GCN133	08/23/00	08/23/00 09/07/00	09/07/00
FLASH POINT CLOSED C	001	S	80GMB064	08/23/00	08/23/00 09/11/00	09/11/00
FLASH POINT	001 REP	S	80GMB064	08/23/00	08/23/00 09/11/00	09/11/00
PAINT FILTER	001	S	80GMB065	08/23/00	08/23/00 09/11/00	09/11/00
PAINT FILTER	001 REP	S	80GMB065	08/23/00	08/23/00 09/11/00	09/11/00
PH	001	S	80GPH217	08/23/00	08/23/00 09/07/00	09/07/00
PH	001 REP	S	80GPH217	08/23/00	08/23/00 09/07/00	09/07/00
TOTAL PHENOLICS	001	S	80GPE051	08/23/00	08/23/00 09/07/00	09/07/00
REACTIVE SULFIDE	001	S	80GSF077	08/23/00	08/23/00 09/11/00	09/11/00
SULFATE	001	S	80GSA046	08/23/00	08/23/00 09/07/00	09/07/00
DSL 2						
REACTIVE CYANIDE	004	S	80GCN133	08/23/00	08/23/00 09/07/00	09/07/00
FLASH POINT CLOSED C	004	S	80GMB064	08/23/00	08/23/00 09/11/00	09/11/00
PAINT FILTER	004	S	80GMB065	08/23/00	08/23/00 09/11/00	09/11/00
PH	004	S	80GPH217	08/23/00	08/23/00 09/07/00	09/07/00
TOTAL PHENOLICS	004	S	80GPE051	08/23/00	08/23/00 09/07/00	09/07/00
REACTIVE SULFIDE	004	S	80GSF077	08/23/00	08/23/00 09/11/00	09/11/00
Reactive Sulfide Spi	004 MS	S	80GSF077	08/23/00	08/23/00 09/11/00	09/11/00
Reactive Sulfide Rep	004 MSD	S	80GSF077	08/23/00	08/23/00 09/11/00	09/11/00
SULFATE	004	S	80GSA046	08/23/00	08/23/00 09/07/00	09/07/00
SULFATE	004 MS	S	80GSA046	08/23/00	08/23/00 09/07/00	09/07/00
LAB QC:						
REACTIVE CYANIDE	LCS BS	W	80GCN133	N/A	N/A 09/07/00	09/07/00
REACTIVE CYANIDE	MB1	W	80GCN133	N/A	N/A 09/07/00	09/07/00
PHENOLICS	LCS BS	W	80GPE051	N/A	N/A 09/07/00	09/07/00
TOTAL PHENOLICS	MB1	W	80GPE051	N/A	N/A 09/07/00	09/07/00
Reactive Sulfide Spi	LCS BS	W	80GSF077	N/A	N/A 09/11/00	09/11/00
REACTIVE SULFIDE	MB1	W	80GSF077	N/A	N/A 09/11/00	09/11/00
SULFATE	LCS BS	W	80GSA046	N/A	N/A 09/07/00	09/07/00
SULFATE	MB1	W	80GSA046	N/A	N/A 09/07/00	09/07/00

SIGNATURE Diane L. Harper DATE 9-11-00

According to 40CFR Part 136.3, pH, Sulfite, Chlorine Residual and Dissolved Oxygen analysis must be performed immediately after aqueous sample collection. When these parameters are not indicated above in the "CLIENT ID/ANALYSIS" column as "FIELD" (e.g.,"PH, FIELD") they were not analyzed immediately, but as soon as possible on day of receipt.

Severn Trent Laboratories Chicago
WET CHEMISTRY METHOD REFERENCE

The following methods are used as reference for the analysis of samples contained with Sample Lot: 9A0806466

PARAMETER	EPA 600	STANDARD METHODS	SW-846	OTHER
Acidity	__305.1	__2310B		
Alkalinity,Total,Carbonate, Bicarbonate	__310.1	__2320B		
Ammonia (Dist/Nesslers)	__350.2	__4500NH$_3$B+C		
Biochemical Oxygen Demand	__405.1	__5210B		
Bottom Sediment & Water				__ASTM D4007
BTU				__ASTM D240
Bromide	__300.0	__4110B	__9056	
Bromine	__300.0 Detection		__5050 Prep	
Chemical Oxygen Demand				__HACH 8000
Chloride	__325.2	__4500C1E	__9251	
	__300.0	__4110B	__9056	
Chlorine (O_2Bomb)	__300.0 Detection		__5050 Prep	__ISE Detection
Chlorine, Residual	__330.4	__4500C1F		
Chromium VI		__3500CrD	__3060A Digest.	
			__7196A	
Color	__110.2	__2120B		
Corrosivity, pH	__150.1		__9045C - Waste pH in Water	
			__9040B	
Corrosivity, Langlier		__2330A+B		
Cyanide, Amenable	__335.1	__4500CNG	__9010B / 9014	__Calculation
Cyanide, Weak, Dissociable		__4500CNI		__Calculation
Cyanide, Reactive			✓7.3.3.2	
Cyanide, Total	__335.2	__4500CNC, E	__9010B / 9014	__ILM03.0/4.0
Density/Specific Gravity		__2710F		__ASTM D1298
				__ASTM D5057
Flashpoint			✓1010	__ASTM D93
				__ASTM D92
Ferrous Iron		__3500 FeD		
Fluoride, Undistilled	__340.2	__4500 FC		
(Distilled – Data Comparability Study Available)	__300.0		__9056	
Fluorine	__340.2 Detection		__5050 Prep	
	__300.0 Detection			
Hardness	__130.2 (EDTA)	__2340C (EDTA)		
		__2340B (Calc)		
Heavy Metals				__USP 231
Ignitability			__Sec. 7	__ASTM D-4982A
MBAS (Surfactants)	__425.1	__5540 C		
Nitrate/Nitrite	__353.2	__4500NO$_3$F		
Nitrate	__353.2 -354.1	__4500NO$_3$F-NO$_2$		
	__300.0	__4110B	__9056	
Nitrite	__354.1	__4500NO$_2$B		
	__300.0	__4110B	__9056	
Odor	__140.1	__2150B		

Severn Trent Laboratories Chicago
WET CHEMISTRY METHOD REFERENCE

The following methods are used as reference for the analysis of samples contained with Sample Lot: 940866

PARAMETER	EPA 600	STANDARD METHODS	SW-846	OTHER
Oil & Grease	__413.1	__5520B	__9070	__1664
Oil & Grease, Soxhlet			__9071A(Hexane)	
Oxygen, Dissolved	__360.1 Electrode	__4500OG		
	__360.2 Winkler	__4500OC		
Paint Filters (Free Liquid)			✓9095A	
Petroleum Hydrocarbons		__5520F	__9071A Extract.	
pH, Water	__150.1	__4500H+B	__9040B	
pH, Soil			✓9045C – Waste/Soil pH in Water	
			__9041A Paper	
Phenolics	__420.2		✓9066	
Orthophosphate as P	__365.2	__4500PE	__9056	
	__300.0	__4110B		
Phosphorus as P	__365.2	__4500PE		
		__4500PE4e(Soil)		
Residue on Evaporation 180C	__160.1 Modified	__2540C Modified		
Solids, Settleable	__160.5	__2540F		
Solids, Total	__160.3	__2540B		
Solids, Total Dissolved	__160.1	__2540C		
Solids, Total Suspended	__160.2	__2540D		
Solids, Total Volatile	__160.4	__2540E		
Solids, Dissolved Volatile	__160.4	__2540E		
Solids, Suspended Volatile	__160.4	__2540E		
Soluble Organic Carbon	__415.1	__5310C		
Specific Conductance	__120.1	__2510B	__9050A	
Sulfate	✓375.4 Mod.	__4500SO_4^{2-}E	__9038 Mod.	
	__300.0	__4110B	__9056	
Sulfide	__376.1	__4500S^{2-}E	__9030A Mod	
			__9030B / 9034	
Sulfide, Reactive			✓7.3.4.2	
Sulfur	__375.4 Detection		__5050Prep	
	__300.0 Detection			
Total Kjeldahl Nitrogen	__351.3	__4500N_{ORG}C		
Total Inorganic Carbon	__415.1	__5310C		
Total Organic Carbon	__415.1	__5310C	__9060 Quads	__Lloyd Kahn
Total Organic Halogens		__5320B	__9020B	
Total Org Halogens on Waste	__325.2 Detection	__9020B Mod	__5050prep	__ISE Detection
	__300.0 Detection			
Turbidity	__180.1	__2130B		
Viscosity, Brookfield				__ASTM D2196
Viscosity, Kinematic				__ASTM D445

Comments:

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Ms. Heather Seus

Date: Monday September 11th, 2000

RE: DSL 1
Project # 00000-000-000-0000
Lab ID: 9A08G466-001
Sample Date: 08/23/00
Date Received: 08/23/00

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Cyanide, Reactive	0.29	u	mg/kg	0.29
Flash Point, Closed Cup	>200		DEG F	
Vol Thru Filter	0.00		ML/100G	
pH	7.8		pH@19.2	+-0.20
Total Phenolics	0.36	u	mg/kg	0.36
Sulfide Reactive	29.1	u	mg/kg	29.1
Sulfate	58.1	u	mg/kg	58.1

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Ms. Heather Seus

Date: Monday September 11th, 2000

RE: DSL 2
Project # 00000-000-000-0000
Lab ID: 9A08G466-004
Sample Date: 08/23/00
Date Received: 08/23/00

Inorganic Data Report

Parameters	Result		Units	Reporting Limit
Cyanide, Reactive	0.30	u	mg/kg	0.30
Flash Point, Closed Cup	>200		DEG F	
Vol Thru Filter	0.00		ML/100G	
pH	8.0		pH@18.5	+-0.20
Total Phenolics	8.1		mg/kg	0.40
Sulfide Reactive	26.7	u	mg/kg	26.7
Sulfate	58.7	u	mg/kg	58.7

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Ms. Heather Seus

Date: Monday September 11th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Method Blank Data Report

Sample	Lab ID	Parameter	Result		Units	Reporting Limit
Blank 1	80GCN133-MB1	Cyanide, Reactive	0.010	u	mg/L	0.010
Blank 1	80GPE051-MB1	Total Phenolics	0.0050	u	mg/L	0.0050
Blank 1	80GSF077-MB1	Sulfide Reactive	1.0	u	mg/L	1.0
Blank 1	80GSA046-MB1	Sulfate	5.0	u	mg/L	5.0

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Ms. Heather Seus

Date: Monday September 11th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Precision Data Report

Sample	Site ID	Parameter	Initial Result	Replicate	RPD
-001REP	DSL 1	Flash Point (REP)	>200	>200	NC
		Vol Thru Filter	0.00	0.00	0.00
		pH	7.8	7.8	0.0

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Ms. Heather Seus

Date: Monday September 11th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Laboratory Control Standards Report

Lab ID	Parameter	Spiked Amount	Units	Spike #1 % Recov.	Spike #2 % Recov.	RPD
80GCN133-LCS	Cyanide, Reactive	0.20	mg/L	25.0	NA	NA
80GPE051-LCS	Phenolics	0.10	mg/L	91.7	NA	NA
80GSF077-LCS	Sulfide Reactive	3.2	mg/L	53.6	NA	NA
80GSA046-LCS	Sulfate	20.0	mg/L	90.4	NA	NA

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Ms. Heather Seus

Date: Monday September 11th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Accuracy Data Report

Sample	Site ID	Parameter		Spiked Sample	Initial Result		Spiked Amount	% Recov
-004	DSL 2	Sulfide Reactive		12.8	26.7	u	94.1	13.7
		Sulfide Reactive	MSD	6.8	26.7	u	79.7	8.6
		Sulfate		540	58.7	u	472	114

To: RMT-Riverdale Chemical
222 South Riverside Plaza
Suite 820
Chicago, IL 60606

Attn: Ms. Heather Seus

Date: Monday September 11th, 2000

Project # 00000-000-000-0000
Lab Batch: 9A08G466

Inorganic Duplicate Spike Report

Sample	Site ID	Parameter	Spike #1 % Recov	Spike #2 % Recov	RPD
-004	DSL 2	Sulfide Reactive	13.7	8.6	200

Severn Trent Laboratories Chicago
INORGANIC ANALYTICAL DATA PACKAGE FOR
RMT-Riverdale Chemical

LABORATORY CHRONICLE

LOT # :9A08G466

CLIENT ID /ANALYSIS	Sample #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
DSL 1							
% SOLIDS	001	S	9AGTS608	08/23/00	08/23/00	08/24/00	08/24/00
DSL 2							
% SOLIDS	004	S	9AGTS608	08/23/00	08/23/00	08/24/00	08/24/00

SIGNATURE _____ DATE 9/8/00

NY CERTIFICATION # 11006

Severn Trent Laboratories Chicago
METALS METHOD REFERENCE

The following methods are used as reference for the analysis of samples contained with this RFW Lot: 9A08G466

SW846	__6010A ___6010B __Ag __Al __As __B __Ba __Be __Ca __Cd __Co __Cr __Cu __Fe __K __Li __Mg __Mn __Mo __Na __Ni __P __Pb __Sb __Se __Si __Sn __Sr __Ti __Tl __V __Zn __Ag7761 __As7060A __Cd7131A __Cr7191 __Cu7211 __Hg7470A __Hg7471A __Pb7421 __Sb7041 __Se7740 __Tl7841 __CN 9010A __CN 9010B/9014
EPA	200.7 __Ag __Al __As __B __Ba __Be __Ca __Cd __Co __Cr __Cu __Fe __K __Li __Mg __Mn __Mo __Na __Ni __P __Pb __Sb __Se __Si __Sn __Sr __Ti __Tl __V __Zn __Ag272.2 __As206.2 __Cd213.2 __Cr218.2 __Cu220.2 __Hg245.1 __Hg245.5 __Pb239.2 __Sb204.2 __Se270.2 __Tl279.2 200.9 __As __Cd __Pb __Sb __Se __Tl
CLP ILM04.0	200.7 CLP-M __Ag __Al __As __B __Ba __Be __Ca __Cd __Co __Cr __Cu __Fe __K __Li __Mg __Mn __Mo __Na __Ni __P __Pb __Sb __Se __Si __Sn __Sr __Ti __Tl __V __Zn __As206.2 __Cd213.2 __Hg245.1 __Hg245.5 __Pb239.2 __Sb204.2 __Se270.2 __Tl279.2 __CN335.2
Digestion Method	SW846 __3005A __3010A __3020A __3020A(+H_2O_2) __3050A __7060A/7740 __7470A __7471A __3050B EPA __200.7 __200.0(+H_2O_2) __200.9(-HCL;+H_2O_2) USEPA/CLP __ILM04.0 Exhibit D, Section III
Extraction Method	SW846 __1311TCLP __1312SPLP __1320MEP Using TCLP ASTM __D3987 Neutral Leach CAM Title 22 __W.E.T.
%Solids	✓SM 2540G __ASTM D2216 __Exhibit D Part F

STL Chicago

INORGANICS DATA SUMMARY REPORT 09/08/00

CLIENT: RMT-Riverdale Chemical
WORK ORDER: 00000-000-000-0000-00-000

RECRA LOT #: 9A08G466

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	DSL 1	% Solids	85.0	%	0.10
-004	DSL 2	% Solids	83.5	%	0.10

Appendix C
Risk Calculations

Information submitted under separate cover.

Appendix D
Evaluation of Data Quality

EVALUATION OF DATA QUALITY FROM LABORATORY ANALYSES OF SAMPLES COLLECTED AT THE RIVERDALE SITE CHICAGO HEIGHTS, ILLINOIS

PREPARED BY
RMT, INC.
MADISON, WISCONSIN

January 2001

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Section 1
Summary of Sampling Program

RMT, Inc. (RMT), collected soil samples from the Riverdale Site. The sampling program and procedures were performed in accordance with a workplan (RMT, 2000) approved by the United States Environmental Protection Agency (USEPA). Primary field samples were analyzed for the constituents listed in Section 1 of the Quality Assurance Project Plan for the Phase I Removal Action Workplan (RMT, 2000). Field quality control samples were collected in accordance with the approved workplan.

The samples were analyzed by Severn Trent Laboratories, (STL) Inc., North Canton, Ohio and West Sacramento, California. The samples were organized into several Sample Delivery Groups for laboratory analysis and reporting of results.

Section 2
Data Quality Evaluation

Data validation of a portion of the Riverdale Site data was accomplished by comparing the quality assurance and quality control (QA/QC) results contained in the laboratory data packages with the requirements specified in the approved Quality Assurance Project Plan (2000); the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA, 1994); the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA, 1999); and the general guidelines published in SW-846, Test Methods for Evaluating Solid Waste, (USEPA, 1996), where appropriate. Particular attention was paid to raw data, chain-of-custody forms, initial and continuing calibrations, blanks, laboratory control samples (LCSs), spike and duplicate analyses, and ICP serial dilution and ICP interference check sample results. The discussion that follows describes the QA/QC results and evaluation.

2.1 Usability

The soil samples were analyzed by STL, Inc., for TCL organochlorine pesticides/PCBs (SOW OLM03.1). A portion of the soil samples were analyzed for target analyte list (TAL) metals and cyanide (SOW ILM04.0), target compound list (TCL) volatile organic compounds (VOCs), and TCL semivolatile organic compounds (SVOCs)). Selected samples were analyzed for chlorophenoxy herbicides (Method 8151A) and 2,3,7,8-PCDD/2,3,7,8-PCDF (polychlorinated dibenzo-p-dioxin/ polychlorinated dibenzofuran) or 2,3,7,8-tetrachlorodibenzo-p-dioxin (Methods 8280 and 8290) in accordance with SW-846 methods. Additionally, matrix spikes/matrix spike duplicates (MSs/MSDs), and field duplicates were collected and analyzed for quality control purposes.

The data quality objectives for the project were met, and the data are usable for the purposes defined in the approved workplan. The procedures specified in the methods were implemented, and the data packages were found to contain all of the deliverables specified in the QAPP.

2.2 Sample Tracking

Laboratory reports received from STL were compared with shipping records to confirm that results were received for each sample that was shipped. All of the results for all sampling locations were received.

2.3 Holding Times and Sample Preservation

With the exceptions indicated below, required holding times were met. VOC analyses were performed within 14 days of sample collection. The samples were extracted for SVOC, pesticide/PCB, and herbicide analyses within 14 days of sample collection, and were analyzed within 40 days after extraction. The extractions for dioxin analysis were performed within 30 days of sample collection, and the analyses were performed within 40 days after extraction. Mercury analysis for all samples was performed within 28 days of the sample collection. Other metals were analyzed within the 6-month time requirement. Cyanide analyses were performed within 14 days of sample collection.

Six samples were extracted for SVOCs past the analytical holding time due to a laboratory accident during the initial analysis. Also, because of exceedences in the surrogate recoveries in one analytical batch for SVOCs, the samples were re-extracted past extraction holding times.

The laboratory analyzed several samples for pesticides up to four times because of analytical difficulties due to sample matrix effects. The extraction holding times were exceeded for many of the reanalyzed samples. Samples in one analytical batch for pesticides/PCBs were re-extracted past the holding time because the associated method blank was contaminated. One pesticide/PCB sample was re-extracted past the holding time because of the problems in the GPC (gel permeation chromatography) procedure. A combination of the first analysis results and the reanalysis results is presented in the summary tables for SVOCs and pesticides (see Sections 2.8 and 2.15).

The data validation qualifier "j" was added to the SVOC results for the samples that were extracted past the holding time. Because of the stability of the compounds, the holding time exceedences are not likely to affect sample results significantly. An index listing of all laboratory and data validation qualifiers is included in Table 1.

2.4 Instrument Performance Check

Satisfactory gas chromatograph/mass spectrometer (GC/MS) instrument performance checks ensure adequate mass resolution, compound identification, and, to some degree, sensitivity. The criteria established for instrument performance checks were met at all times. The analyses of the instrument performance check solutions were performed at the required frequency (every 12 hours of sample analysis per instrument). Bromofluorobenzene (BFB) and decafluorotriphenylphosphine (DFTPP) were used as check compounds in VOC and SVOC analyses, respectively.

The ion abundance ratio, signal-to-noise ratio, retention times, and the mass assignment criteria were met for all instrument performance checks. The ion abundances were correctly normalized to the appropriate m/z (mass/charge) ratio.

2.5 Calibrations

Initial calibration establishes that the instrument is capable of acceptable performance at the beginning of the analytical sequence and that the calibration curve is linear. Continuing calibration verifies the calibration and evaluates daily instrument performance.

2.5.1 GC/MS Calibration

Initial calibrations containing target compounds and system monitoring compounds were performed at the required frequency and concentration levels. Initial calibrations of the GC/MS at five concentrations were performed after instrument performance check criteria were met and prior to the analysis of samples and blanks. Internal standards were added to all calibration standards and samples (including blanks and MS/MSD). The GC/MS calibration was verified every 12 hours with one mid-range standard.

The minimum response factor (RF) criterion was met in the GC/MS analyses. The stability of the compound response factors was indicated by acceptable percent relative standard deviation (%RSD) values of the RFs. The percent difference (% D) criteria for continuing calibration were met. The percent difference (%D) values for one compound during one continuing calibration and for two compounds during another continuing calibration were above 25 percent. However, it is acceptable for up to four compounds to exceed the 25 percent criteria. The minimum RF criteria for these compounds were met.

2.5.2 GC Calibration

In the GC/ECD (gas chromatograph/electron capture detector) analysis of chlorophenoxy herbicides and organochlorine pesticides/PCBs, a performance evaluation mixture (PEM) was analyzed during the initial calibration sequence and in every 12-hour analytical period. Initial calibration of individual standard mixtures of herbicides, organochlorine pesticides, and multicomponent target compounds were performed on two GC columns at the required frequency and concentration level. A five-point initial calibration was performed for herbicides, a three-point initial calibration was performed for single-response pesticides, and a one-point calibration was performed for multicomponent pesticides/PCBs. The percent RSDs of the calibration factors were within QC criteria.

Continuing calibration for herbicides, pesticides and PCBs, including the analyses of the PEM, the midpoint concentration of herbicides, pesticides, and Aroclors, was performed to verify the calibration and evaluate instrument performance. The Percent Difference (%D) values were within the QC limit on both columns, and the samples were bracketed with acceptable results. Good peak resolution was achieved, and RT (retention time) and calibration factors were available for each peak. The RTs for the herbicides, single-response pesticides, and surrogates were within the correct RT windows. Adequate calibration bracketed the samples, and overall, good instrument stability and performance were maintained. With the exception of the problems with the GPC procedure during the analysis of one field sample, the florisil cartridge checks and GPC calibration checks were acceptable during the pesticide/PCB analyses.

2.5.3 Inorganic Calibration

Initial calibrations and continuing calibration verifications, including initial and continuing calibration blanks, were performed at the required frequency and concentration level as specified in the methods. All calibration results were within QC acceptance criteria. Low levels of metals were detected in the calibration blanks at allowable levels.

2.6 Internal Standard Responses and Retention Times in the GC/MS Analysis

The quantitative determination of the VOC and SVOC compounds is based on the use of internal standards added immediately prior to analysis. Therefore, satisfactory internal standard responses in all calibration standards, samples, and blanks are critical.

Three internal standard constituents (bromochloromethane; 1,4-difluorobenzene; and chlorobenzene-d5) were used in the VOC analysis. Six internal standard constituents (1,4 dichlorobenzene-d4; naphthalene-d8; acenaphthene-d10; phenanthrene-d10; chrysene-d12; and perylene-d12) were used in the SVOC analysis.

$^{13}C_{12}$-2,3,7,8-TCDD; $^{13}C_{12}$-1,2,3,7,8-PeCDD; $^{13}C_{12}$-1,2,3,6,7,8-HxCDD; $^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD; $^{13}C_{12}$-OCDD; $^{13}C_{12}$-2,3,7,8-TCDF; $^{13}C_{12}$-1,2,3,7,8-PeCDF; $^{13}C_{12}$-1,2,3,4,7,8-HxCDF; and $^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF were the internal standards used in the 2,3,7,8-PCDD/PCDF analysis using Method 8290 (SW-846). All internal standard recoveries from the field samples were within control limits. The recoveries of four of the nine internal standards from a laboratory control sample were outside the recommended limits. All native 2,3,7,8-PCDD/PCDF spike recoveries were within control limits, indicating that the four $^{13}C_{12}$-labeled internal standards do not have a an adverse effect on the results. With the exception of 2,3,7,8-TCDF, no affected dioxin or furan

congeners were detected in the associated field samples. $^{13}C_{12}$-2,3,7,8-TCDD was the internal standard used during the Method 8280 (SW-846) analysis of 2,3,7,8-TCDD with acceptable results. $^{13}C_{12}$-2,3,7,8-TCDD; $^{13}C_{12}$-1,2,3,6,7,8-HxCDD; $^{13}C_{12}$-OCDD; $^{13}C_{12}$-2,3,7,8-TCDF; and $^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF were the internal standards used in the 2,3,7,8-PCDD/PCDF analysis using Method 8280 (SW-846), also with acceptable results.

With the exception of three samples for VOCs that had one internal standard outside control limits, all internal standard area counts and retention times (RTs) were within the QC limits. The laboratory reanalyzed the VOC samples when the internal standards were outside control limits with similar results indicating sample matrix interference.

2.7 Compound Identification

To verify that VOCs and SVOCs were not erroneously identified, the relative retention times (RRTs) of the samples were checked to see if they were within the standard RRT and if the mass spectra of the samples and standards matched. The ion abundance ratio and response factor criteria were met. The QC criteria of the GC analyses were acceptable: the retention times of the surrogates, matrix spikes, and analytical compounds were within the calculated RT windows in the GC analysis. No off-scale chromatographic peaks were present.

Tentatively identified compounds (TICs) were reported from several samples analyzed for VOCs and SVOCs. Some TIC constituents were present also in the method blanks.

When the final sample extract concentrations for the pesticides were sufficiently high during the GC/ECD analysis, the laboratory performed GC/MS confirmation analyses for the pesticides. If the presence of a compound was not confirmed by GC/MS, data validation qualifiers (ncu) were added to the sample results in the summary data tables to indicate that the reported result from the GC analysis should be considered nondetected.

When the difference for the detected pesticide result between the two GC columns was greater than 25 percent, the laboratory qualified the result with a "P" flag. The difference values were frequently very high (up to several hundred percent). When the difference was greater then 30 percent, a data validation qualifier (j) was added to the pesticide result to suggest uncertainty in the sample result.

As required by the method, the presence of 2,3,7,8-TCDF in the samples was verified with a confirmation column during the Method 8290 analysis.

2.8 Method Blanks and Preparation Blanks

Method blanks and preparation blanks were analyzed for all analytical constituents to assess potential sample contamination resulting from laboratory procedures. A method or preparation blank (procedural blank) is carried through the same analytical steps (preparation and analysis) as the samples.

Methylene chloride and acetone were detected in the method blanks for VOCs. Low levels of bis(2-ethylhexyl)phthalate were detected in two method blanks for SVOCs. This compound was not detected in the associated field samples. Low levels of TIC constituents were detected in all SVOC blanks.

A low level of the non-2,3,7,8-TCDD was detected in the method blanks analyzed for 2,3,7,8-PCDD/2,3,7,8-PCDF during the analysis by Method 8290 (SW-846).

No herbicides were detected in the method blank. Aldrin was detected in one pesticide/PCB method blank at a low level. One method blank was contaminated with seven pesticide compounds, and another method blank was contaminated with two pesticide compounds probably because of carry-over problems due to the high sample concentrations. The laboratory re-extracted and reanalyzed the analytical batch. However, the re-extractions were performed past the extraction holding times. The re-extracted blank still contained three pesticides. All instrument blanks associated with both analyses were free of contamination. The laboratory reported both results. The first analysis results were used in the summary data tables for three samples. Data validation qualifiers were added to the sample results on the basis of blank contamination.

Preparation blanks were analyzed for the same inorganic parameters as the samples. Low levels of metals (below Quantitation Limits) were detected in three preparation blanks analyzed for metal parameters.

When a sample detection was associated with the blank detection for the organic target compounds, the laboratory qualified the sample result with a "B" flag. Data validation qualifiers were added to the sample data on the basis of blank contamination. When the concentrations of the common laboratory contaminants, such as acetone or methylene chloride in the sample were less than 10 times the associated blank value, and when the concentrations of other constituents in the sample were less than five times the associated blank value, the sample results were qualified as nondetected ("u") in accordance with USEPA (1994 and 1999) data validation guidance. Detections of acetone and methylene chloride were therefore qualified with a "u" flag. Some sample detections of antimony, beryllium, and cadmium were also qualified with "u" flags on the basis of blank contamination.

2.9 Instrument Blanks

Instrument blanks were analyzed by the GC/ECD for pesticide/PCB analyses to check that no carry-over problems were present. No pesticides or PCBs were detected in the instrument blanks. Observed retention times for the surrogates in the instrument blanks were within the retention time windows for the calibrations.

2.10 Trip Blanks

To assess the potential for sample contamination during sample collection, shipment, and storage, trip blanks were analyzed for TCL VOCs. Low levels of methylene chloride and acetone were detected in trip blanks. Data validation qualifiers were added to the sample data on the basis of trip blank detections (see above). Trip blank constituents were also qualified as nondetected on the basis of method and/or holding blank detections.

2.11 Holding/Storage Blanks

The laboratory holding/storage blank was analyzed for VOCs to assess potential sample contamination during sample storage. Low levels of methylene chloride and acetone were detected in the holding blank. Data validation qualifiers were added to the sample results on the basis of holding blank detections (see above).

2.12 Matrix Spikes/Matrix Spike Duplicates

Matrix spikes (MSs) and matrix spike duplicates (MSDs) provide information about the effects of the sample matrix on the sample preparation and measurement performance. A matrix spike consists of a sample that is spiked with a group of target constituents representative of the method analytes and carried through the appropriate steps of the analysis, including extraction, distillation, and digestion. Laboratory control sample analyses were performed for dioxins in place of the MS/MSD analysis in accordance with the method specifications.

Five spike compounds were used in one MS/MSD analysis performed for TCL VOCs. The VOC spike analysis results were acceptable.

Eleven spike compounds were used in one MS/MSD analysis performed for TCL SVOCs. The recovery of pyrene was below the control limits during the MS/MSD analyses of samples SL-80 and SL82-9.0'. The RPD value for acenaphthene was above the control limit in sample SL-80. However, the individual recoveries were acceptable. All other spike SVOC recoveries and RPDs were acceptable.

Six single-response pesticides were used in the MS/MSD analysis for TCL organochlorine pesticides. Matrix interference problems were indicated during several MS/MSD analyses for

pesticides. The recovery of heptachlor was below the control limits during the MS/MSD analysis of sample SL84-5'. The recovery of aldrin was below the control limits during the MS/MSD of sample SL-81. The recoveries of all spike compounds were outside control limits during the analysis of samples SL33-1.2' and SL69-8'. The pesticide spike analysis results of samples SL66-1' and SL82-9.0' were acceptable.

No data validation qualifiers were added to the sample results for the organic target compounds on the basis of MS/MSD results alone.

All analytical constituents were injected into the spike samples for TAL metals. The recovery of antimony in one spike analysis of sample SL50-6' was below the control limit. The recoveries of antimony and selenium in another spike analysis of sample DSL-16 were above the control limits. The laboratory added "N" qualifiers to the associated sample results. Data validation qualifiers (j) were also added to the sample data on the basis of these findings to indicate approximate concentrations or Quantitation Limits. All other spike analysis results for metals and other inorganic parameters were within QC limits.

2.13 Laboratory Duplicate Analysis

Duplicate or MSD analyses were performed for metal parameters to assess the precision of laboratory procedures. The RPD values for calcium, magnesium, and lead in one duplicate analysis of sample DSL-16, and the RPD values of aluminum and lead in another duplicate analysis of sample SL50-6', were above control limits. The laboratory added "*" qualifiers to the sample results. Data validation qualifiers (j) were also added to the sample data on the basis of these findings to indicate approximate concentrations or Quantitation Limits. All other duplicate analysis results for metals and other inorganic parameters were within QC limits.

2.14 Surrogate/System Monitoring Compound (SMC) Spikes

Surrogate/SMC spikes are compounds similar to the analytes of interest in chemical behavior, but they are not normally found in environmental samples. Laboratory performance of individual samples and blanks was established by spiking all samples and blanks prior to extraction and analysis to determine surrogate/SMC spike recoveries among the standards, samples, blanks, PEMs, and MSs/MSDs in the sample and blank matrices.

Three surrogate compounds, 4-bromofluorobenzene (BFB); 1,2-dichloroethane-d4; and toluene-d8 were used in the VOC analysis. 2,4-Dichlorophenylacetic acid was the surrogate used in herbicide analysis. All VOC and herbicide surrogate results were within control limits.

SVOC surrogates included nitrobenzene-d5; 2-fluorobiphenyl; terphenyl-d14; phenol-d5; 2-fluorophenol; 2,4,6-tribromophenol; 2-chlorophenol-d4; and 1,2-dichlorobenzene-d4. The

recovery of three of eight surrogates were outside the control limits during the analysis of three samples (SL51-4', SL51-6', and SL52-6') for SVOCs. The recovery of four of eight surrogates were outside the control limits in two samples (SL53-6' and SL55-6'). However, the extractions were performed past the required holding time. The laboratory re-extracted and reanalyzed the samples. Data validation qualifiers (j) were added to the sample results in the summary data tables as appropriate.

Tetrachloro-m-xylene (TCX) and decachlorobiphenyl (DCB) were used in pesticide/PCB analyses. When a sample dilution was required due to elevated concentrations of the target compounds, the surrogates were diluted out from some samples. Because of analytical difficulties due to sample matrix interferences, the recoveries of one or both pesticide/PCB surrogates were outside the control limits. When the surrogate recoveries were outside control limits, the laboratory analyzed several samples for pesticides up to four times. The extraction holding times were exceeded for many of the reanalyzed samples. Some of the pesticide results from the original analysis and the reanalysis exhibited variability likely because of sample heterogeneity. The recoveries of TCX and DCB from samples SL34-3.5' and SL69-8' were outside control limits on both chromatographic columns. The recovery of TCX from samples SL37-6.2', SL38-6.2', SL39-6.2', SL51-4', SL52-6', and one associated method blank was between 10 and 30 percent on both chromatographic columns. However, the recoveries of DCB were acceptable. The recovery of TCX from samples SL75-8' (29 percent), SL-81 (25 percent), and the MS of SL-81 (25 percent) was slightly below the control limit on the second column; and the recovery of DCB from the MS of sample SL66-1' (188 percent) was above the control limit on the second column. The recovery of the affected surrogate on the primary column and the recovery of the other surrogate on both columns were acceptable.

2.15 Laboratory Control Samples

The laboratory control samples (LCSs) were used to monitor the overall performance of all steps in the analysis, including the sample preparation. All analytical constituents were used in the LCS analyses for herbicides and dioxins/furans. With the exception of elevated recoveries of two of 10 dioxin/furan congeners from one LCS for the Method 8280 analysis, and a slightly elevated recovery of 2,3,7,8-TCDD from the analysis of 2,3,7,8-TCDD alone, all LCS recoveries of herbicides and the native dioxin/furan compounds were within QC criteria. No dioxins/furans were detected from the associated field samples. Therefore, no corrective action was taken. The $^{13}C_{12}$-labeled internal standard results were discussed in Subsection 1.1.

2.16 ICP Serial Dilution Analysis

ICP serial dilution analyses of groups of samples of a similar matrix were performed to determine if interferences due to the sample matrix were present. All serial dilution results were acceptable.

2.17 Field Duplicate Samples

Four pairs of field duplicates were compared for pesticides/PCBs. No PCBs were detected in any of the duplicate pairs. No pesticide constituents were detected from the duplicates from SL66-4'.

Tables 2 shows the comparison of the reported analytes in the duplicate pairs. Relative percent difference (RPD) values were calculated for only those pairs in which both reported results were above the Limit of Quantitation. Constituents that were less than the Limit of Detection are not shown.

Heterogeneity of samples, difficult sample matrices, and the difficulty in replicating the analytical results from small sample aliquots decrease the precision expressed as an RPD between the duplicates. Field duplicates measure both field and laboratory precision. As expected, the variability is greater than for the laboratory duplicates, which measure only laboratory precision.

Two RPD values calculated for the soil duplicates exceeded 50 percent. Note also that some of the low-level pesticide reports were not confirmed by the duplicate pair from the same location.

There are no required criteria for field duplicate analysis comparability. Therefore, no data validation qualifiers were added to the sample data on the basis of these findings.

Section 3
References

RMT. 2000. Quality assurance project plan for the phase I removal action prepared for Riverdale Company, Chicago Heights, Illinois. Appendix A to the Workplan.

USEPA. 1979. Methods for chemical analysis of water and waste, EPA 600/4-79-020 with subsequent revisions.

USEPA. 1994. USEPA contract laboratory program, national functional guidelines for inorganic data review.

USEPA. 1999. USEPA contract laboratory program, national functional guidelines for organic data review.

Table 1
Index of Laboratory and Data Validation Qualifiers

Laboratory Qualifiers

INORGANIC DATA	
B	Analyte value is below the Quantitation Limit but greater than or equal to the Instrument Detection Limit (IDL).
D	Analyte value is from a diluted analysis.
N	Spiked sample recovery is not within control limits.
U	Analyte was tested for but was not detected; value indicates the detection limit.
*	Duplicate analysis is not within control limits.
ORGANIC DATA	
A	The tentatively identified compound (TIC) is an aldol-condensation product.
B	Analyte was present in the method blank.
C	The presence of the compound was confirmed by GC/MS analysis.
D	Analyte value is from a diluted analysis.
E	Reported concentration exceeded the calibration range of the instrument.
J	Reported value is less than the reporting limit, but greater than zero, or when a tentatively identified compound is present.
N	Indicates presumptive evidence of a tentatively identified compound. Identification is based on mass spectral library search.
P	The difference for detected pesticide result between the two GC columns is greater than 25 percent.
U	The compound was analyzed for but not detected; the value indicates the detection limit.

Data Validation Qualifiers

b	Analyte was present in the trip blank.
ncu	If the presence of a compound reported from the GC/ECD analysis was not confirmed by GC/MS, data validation qualifiers (ncu) were added to the sample results in the summary data tables to indicate that the reported result from the GC analysis should be considered nondetected.
s	Analyte was present in the laboratory holding/storage blank.
u	Analyte was present at less than 10 times the concentration in the associated method (B), trip (b), field (f), and/or laboratory storage blank for common laboratory contaminants, or at less than 5 times the blank concentration of other analytes, and is therefore qualified as nondetectable (u) according to USEPA data validation procedures (USEPA, 1994a and 1994b).
j	When specific QC criteria are outside the established control limits, the reported concentration or the Quantitation Limit is approximate. When the difference for detected pesticide result between the two GC columns was greater then 30 percent, a data validation qualifier (j) was added to the pesticide result to suggest uncertainty in the sample result.

Table 2
Detected Parameters in the Field Duplicates
(units µg/kg)

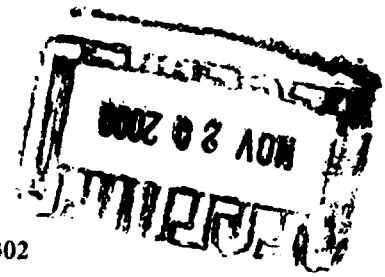
PARAMETER	SL41-5.2'	SL41-5.2' DUP	RPD %	SL47-4'Re	SL47-4' DUP	RPD %	SL66-4'	SL66-4' DUP	RPD %	SL84-5'	SL84-5' DUP	RPD %
Aldrin	300,000 C	190,000 C	45	15	12	22	<2.0	<2.1	--	1.6 JP	39	--
Alpha-Chlordane	4,400 C	2,300 PC	63	<2.1	4.1 J	--	<2.0	<2.1	--	<4.1	6.0 P	--
Gamma-Chlordane	15,000 C	7,300 C	69	<2.1	3.1 JP	--	<2.0	<2.1	--	0.54 J	13	--
Alpha-BHC	<970	<2,000	--	<2.1	<4.2	--	<2.0	<2.1	--	<4.1	<4.1	--
Beta-BHC	<970	<2,000	--	1.2 JP	3.9 JP	--	<2.0	<2.1	--	<4.1	<4.1	--
Delta-BHC	<970	<2,000	--	<2.1	2.3 JP	--	<2.0	<2.1	--	<4.1	<4.1	--
Gamma-BHC (Lindane)	<970	<2,000	--	<2.1	2.6 JP	--	<2.0	<2.1	--	<4.1	<4.1	--
4,4'-DDD	9,100 C	6,400 C	35	<4.1	55	--	<4.0	<4.2	--	<8.1	<8.1	--
4,4'-DDE	<1,900	<3,900	--	<4.1	17	--	<4.0	<4.2	--	<8.1	<8.1	--
Dieldrin	1,800 JC	<3,900	--	2.2 JP	4.8 J	--	<4.0	<4.2	--	<8.1	7.3 JP	--
Endosulfan I	<970	<2,000	--	<2.1	5.8	--	<2.0	<2.1	--	<4.1	<4.1	--
Endrin ketone	<480	<980	--	<1.0	8.3 J	--	<4.0	<4.2	--	<8.1	<8.1	--
4,4'-DDT	18,000 C	16,000 C	12	<4.1	<8.4	--	<4.0	<4.2	--	<8.1	<8.1	--
Heptachlor	22,000 C	15,000 C	38	<2.1	3.6 J	--	<2.0	<2.1	--	<4.1	<4.1	--

Notes:
-- = one or both values are less than the Quantitation Limit; therefore, an RPD calculation is of limited significance and was not done.
C = the presence of the compound was confirmed by GC/MS.
J = analyte value is estimated at below the Quantitation Limit.
P = the difference for detected pesticide result between the two GC columns is greater than 25 percent.
Only the VOCs listed were detected.
Note that samples SL41-5.2', SL41-5.2' DUP, SL47-4', and SL-47-4' DUP have not been validated.

Appendix E
Toxic Equivalent Concentration Calculations

Table E-1
Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration Calculations Using International Toxic Equivilant Factors (TEQs)
Riverdale Chemical Company - Chicago Heights, Illinois

ANALYTE		G0I070252-001 (SL53) ng/kg		G0I070252-002 (SL54) ng/kg		G0I280336-001 (DSL8) ng/kg		G0I280336-002 (SL71-8') ng/kg		G0I280336-003 (SL68-8') ng/kg	
	I-TEFs										
2378-TCDD	1	24	24	37	37	25	25	0.021	0.02	6.7	6.7
12378-PeCDD	0.5	1.05	0.53	0.6	0.28	0.395	0.198	0.015	0.01	0.32	0.16
123478-HxCDD	0.1	0.65	0.07	0.175	0.02	0.14	0.014	0.011	0.001	0.09	0.01
123678-HxCDD	0.1	1.4	0.14	0.65	0.07	0.13	0.013	0.011	0.001	0.09	0.01
123789-HxCDD	0.1	1.3	0.13	0.55	0.06	0.12	0.012	0.010	0.001	0.09	0.01
1234678-HpCDD	0.01	30	0.3	24	0.2	0.6	0.006	0.009	0.0001	0.08	0.0008
OCDD	0.001	190	0.19	210	0.210	0.9	0.001	0.0135	0.00001	0.37	0.0004
2378-TCDF	0.1	4.1	0.41	2.2	0.22	0.57	0.057	0.06	0.01	0.13	0.01
12378-PeCDF	0.05	1.05	0.05	0.385	0.02	0.24	0.01	0.095	0.005	0.15	0.01
23478-PeCDF	0.5	1.1	0.55	0.34	0.17	0.22	0.11	0.095	0.05	0.14	0.07
123478-HxCDF	0.1	1.55	0.16	0.55	0.06	0.08	0.01	0.0065	0.001	0.01	0.001
123678-HxCDF	0.1	0.85	0.09	0.36	0.04	0.07	0.01	0.0065	0.001	0.0095	0.001
123789-HxCDF	0.1	0.11	0.01	0.15	0.02	0.08	0.01	0.0075	0.001	0.01	0.0011
234678-HxCDF	0.1	0.9	0.09	0.29	0.03	0.09	0.01	0.007	0.001	0.01	0.001
1234678-HpCDF	0.01	8.6	0.09	6.2	0.06	0.36	0.0036	0.008	0.0001	0.03	0.0003
1234789-HpCDF	0.01	0.475	0.0048	3.15	0.03	0.46	0.0046	0.0095	0.0001	0.04	0.0004
OCDF	0.001	16	0.02	15	0.02	0.15	0.0002	0.012	0.00001	0.05	0.00005
	ng/kg	TEQ	26.81	TEQ	38.5	TEQ	25.5	TEQ	0.1	TEQ	7.0
	mg/kg		2.68E-05		3.9E-05		2.5E-05		9.2E-08		7.0E-06



SEVERN TRENT SERVICES

STL Miami

STLNOR003302
Ken Kuzior
STL North Canton
4101 Shuffel Drive N.W.
North Canton, OH 44720

October 27, 2000
Submission # 10001219
Order # 100451
FDEP CompQAP# 920323G
FL-DOH Certification# E86349, 86413

QUICK REFERENCE SUMMARY REPORT
ALL BDL'S FOR ANALYTES HAVE BEEN REMOVED

Site Location/Project
.
Riverdale
Order # 100451

Sample I.D.: SL76-4'
Collected: 10/20/00 09:30
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	82.7	%	160.3(ASTM-D2216	0.01	10/25/2000	10/26/2000	EF/CT
8081A Chlorinated Pesticides & PCBs in Solids		DONE	MEDF	1	10/25/2000	10/26/2000	JT
8151A Chlorophenoxy Herbicides in Soil, Wastes		DONE	MEDF	1	10/25/2000	10/27/2000	JT

Site Location/Project
.
Riverdale
Order # 100455

Sample I.D.: SL77-6'
Collected: 10/20/00 10:00
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	82.6	%	160.3(ASTM-D2216	0.01	10/25/2000	10/26/2000	EF/CT
8081A Chlorinated Pesticides & PCBs in Solids		DONE	MEDF	1	10/25/2000	10/26/2000	JT
Aldrin	I-2.9	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
8151A Chlorophenoxy Herbicides in Soil, Wastes		DONE	MEDF	1	10/25/2000	10/27/2000	JT

Site Location/Project
.
Riverdale
Order # 100456

Sample I.D.: SL78-1.5'
Collected: 10/20/00 10:10
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	77.3	%	160.3(ASTM-D2216	0.01	10/25/2000	10/26/2000	EF/CT

STLNOR003302
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October 27, 2000
Submission # 10001219
Order # 100456
FDEP CompQAP# 920323G
FL-DOH Certification# E86349, 86413

QUICK REFERENCE SUMMARY REPORT
ALL BDL'S FOR ANALYTES HAVE BEEN REMOVED

8081A	Chlorinated Pesticides & PCBs in Solids		DONE	MEDF	1	10/25/2000	10/26/2000	JT
Aldrin		I-1.6	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
8151A	Chlorophenoxy Herbicides in Soil, Wastes		DONE	MEDF	1	10/25/2000	10/27/2000	JT

Site Location/Project
.
Riverdale
Order # 100457

Sample I.D.: SL78-6'
Collected: 10/20/00 10:13
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	79.3	%	160.3(ASTM-D2216	0.01	10/25/2000	10/26/2000	EF/CT
8081A Chlorinated Pesticides & PCBs in Solids		DONE	MEDF	1	10/25/2000	10/26/2000	JT
Aldrin	16.6	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Dieldrin	I-3.0	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
8151A Chlorophenoxy Herbicides in Soil, Wastes		DONE	MEDF	1	10/25/2000	10/27/2000	JT

Site Location/Project
.
Riverdale
Order # 100458

Sample I.D.: SL79-2.5'
Collected: 10/20/00 10:20
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	79.3	%	160.3(ASTM-D2216	0.01	10/25/2000	10/26/2000	EF/CT
8081A Chlorinated Pesticides & PCBs in Solids		DONE	MEDF	1	10/25/2000	10/26/2000	JT
Aldrin	404	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT

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October 27, 2000
Submission # 10001219
Order # 100458
FDEP CompQAP# 920323G
FL-DOH Certification# E86349, 86413

QUICK REFERENCE SUMMARY REPORT
ALL BDL'S FOR ANALYTES HAVE BEEN REMOVED

8151A	Chlorophenoxy Herbicides in Soil, Wastes	DONE	MEDF	1	10/25/2000	10/27/2000	JT

BDL: Indicates Analyte is Below Detection Limit
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7
Unless otherwise noted, mg/Kg denotes wet weight
MEDF: Matrix Effected Dilution Factor

Authorized Laboratory Management

Chain of Custody Record

00/10- ~~145~~ DAB

Quanterra

OUA-4124 0797

100451 - 100458

Client	Project Manager	Date	Chain of Custody Number
RMT	Rae Mindock	10/20/00	49730
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
222 S. Riverside Plaza Suite 820	312 575 0200 / 312 575 0300		
City / State / Zip Code	**Site Contact**	**Lab Contact**	
Chicago IL 60606		Ken Kuzior	
Project Name	**Carrier/Waybill Number**		
Riverdale			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)		Date	Time	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: CLP Pest	CLP Hrb.	Special Instructions/ Conditions of Receipt
SL76-4'	100451	10/20/00	9:30			X							X	X	
SL77-6'	100455	10/20/00	10:00			X							X	X	
SL78-1.5'	100456	10/20/00	10:10			X							X	X	
SL78-6'	100457	10/20/00	10:13			X							X	X	
SL79-2.5'	100458	10/20/00	10:20			X							X	X	Extract only - May or may not analyze sample

OKAY TO ANALYZE FOR TOTAL 8081 & 8151, AS PER KEN KUZIOR. HE ALSO STATED TO SEND REPORT & INVOICE TO STL NORTH CANTON, THEN TO SEND ANOTHER COPY OF REPORT TO RAE MINDOCK FAX#(312)575-0300

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal

☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ASAP

QC Requirements (Specify)

	Relinquished By	Date	Time	Received By	Date	Time
1.	[signature]	10/20/00		Anne Sanders	10-21-00	925
2.	Terry Burns	10-24-00	315PM	[signature] STL-M	10/25/00	1000
3.						

Comments: RUSH # GB321 Due 10/27/00) See attached for 1&2)

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

SEVERN TRENT SERVICES

STL Miami

STLNOR003302
Ken Kuzior
STL North Canton
4101 Shuffel Drive N.W.
North Canton, OH 44720

October 27, 2000
Submission # 10001219
Order # 100451
FDEP CompQAP# 990102
FL-DOH Certification# E86349, 86413, 86565

Site Location/Project
.
Riverdale

Sample I.D.: SL76-4'
Collected: 10/20/00 09:30
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	82.7	%	160.3(ASTM-D221	0.01	10/25/2000	10/26/2000	EF/CT
8081A Chlorinated Pesticides & PCBs in Solids			MEDF	1			
a-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
b-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
-BHC (lindane)	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
d-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Aldrin	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor Epoxide	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan I	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Dieldrin	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
4,4-DDE	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan II	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDD	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin Aldehyde	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Endosulfan Sulfate	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDT	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT

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October 27, 2000
Submission # 10001219
Order # 100451
FDEP CompQAP# 990102
FL-DOH Certification# E86349, 86413, 86565

Site Location/Project
.
Riverdale

Sample I.D.: SL76-4'
Collected: 10/20/00 09:30
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Methoxychlor	BDL	ug/Kg	3550/8081A-82	180.000	10/25/2000	10/26/2000	JT
Arochlor 1016	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1221	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1232	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
›chlor 1242	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1248	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1254	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1260	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Toxaphene	BDL	ug/Kg	3550/8081A-82	250.000	10/25/2000	10/26/2000	JT
Chlordane	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
8151A Chlorophenoxy Herbicides in Soil, Wastes			MEDF	1			
Dalapon	BDL	ug/Kg	8151A	1160.000	10/25/2000	10/27/2000	JT
Dicamba	BDL	ug/Kg	8151A	54.000	10/25/2000	10/27/2000	JT
2,4-D	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
Pentachlorophenol	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
2,4,5-TP (silvex)	BDL	ug/Kg	8151A	34.000	10/25/2000	10/27/2000	JT
2,4,5-T	BDL	ug/Kg	8151A	30.000	10/25/2000	10/27/2000	JT
Dinoseb	BDL	ug/Kg	8151A	14.000	10/25/2000	10/27/2000	JT

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STL North Canton
4101 Shuffel Drive N.W.
North Canton, OH 44720

October 27, 2000
Submission # 10001219
Order # 100451
FDEP CompQAP# 990102
FL-DOH Certification# E86349, 86413, 86565

Site Location/Project
.
Riverdale

Sample I.D.: SL76-4'
Collected: 10/20/00 09:30
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Picloram	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
Dichloroprop	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
2,4-DB	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
MCPP	BDL	ug/Kg	8151A	660.000	10/25/2000	10/27/2000	JT
2,4,5-TP	BDL	ug/Kg	8151A	430.000	10/25/2000	10/27/2000	JT

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effected Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:Al.=#41180, Ct.=#PH0217, Ks.=#E270 + E1245, Ky.=#90087, La.=#9601, Md.=#271, Ma.=#M-FL535
NC.=#539, ND.=#R163, OK.=#9523, SC.=#96023, Tn.=#TN02826

Authorized Laboratory Management

STLNOR003302
Ken Kuzior
STL North Canton
4101 Shuffel Drive N.W.
North Canton, OH 44720

October 27, 2000
Submission # 10001219
Order # 100455
FDEP CompQAP# 990102
FL-DOH Certification# E86349, 86413, 86565

Site Location/Project
.
Riverdale

Sample I.D.: SL77-6'
Collected: 10/20/00 10:00
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	82.6	%	160.3(ASTM-D221	0.01	10/25/2000	10/26/2000	EF/CT
8081A Chlorinated Pesticides & PCBs in Solids			MEDF	1			
a-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
b-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
?HC (lindane)	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
d-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Aldrin	I-2.9	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor Epoxide	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan I	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Dieldrin	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
4,4-DDE	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan II	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDD	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin Aldehyde	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Endosulfan Sulfate	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDT	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT

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October 27, 2000
Submission # 10001219
Order # 100455
FDEP CompQAP# 990102
FL-DOH Certification# E86349, 86413, 86565

Site Location/Project
.
Riverdale

Sample I.D.: SL77-6'
Collected: 10/20/00 10:00
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Methoxychlor	BDL	ug/Kg	3550/8081A-82	180.000	10/25/2000	10/26/2000	JT
Arochlor 1016	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1221	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1232	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
ochlor 1242	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1248	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1254	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1260	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Toxaphene	BDL	ug/Kg	3550/8081A-82	250.000	10/25/2000	10/26/2000	JT
Chlordane	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
8151A Chlorophenoxy Herbicides in Soil, Wastes			MEDF	1			
Dalapon	BDL	ug/Kg	8151A	1160.000	10/25/2000	10/27/2000	JT
Dicamba	BDL	ug/Kg	8151A	54.000	10/25/2000	10/27/2000	JT
2,4-D	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
Pentachlorophenol	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
2,4,5-TP (silvex)	BDL	ug/Kg	8151A	34.000	10/25/2000	10/27/2000	JT
2,4,5-T	BDL	ug/Kg	8151A	30.000	10/25/2000	10/27/2000	JT
Dinoseb	BDL	ug/Kg	8151A	14.000	10/25/2000	10/27/2000	JT

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4101 Shuffel Drive N.W.
North Canton, OH 44720

October 27, 2000
Submission # 10001219
Order # 100455
FDEP CompQAP# 990102
FL-DOH Certification# E86349, 86413, 86565

Site Location/Project
.
Riverdale

Sample I.D.: SL77-6'
Collected: 10/20/00 10:00
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Picloram	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
Dichloroprop	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
2,4-DB	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
MCPP	BDL	ug/Kg	8151A	660.000	10/25/2000	10/27/2000	JT
MCPA	BDL	ug/Kg	8151A	430.000	10/25/2000	10/27/2000	JT

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effected Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:Al.=#41180, Ct.=#PH0217, Ks.=#E270 + E1245, Ky.=#90087, La.=#9601, Md.=#271, Ma.=#M-FL535
NC.=#539, ND.=#R163, OK.=#9523, SC.=#96023, Tn.=#TN02826

Authorized Laboratory Management

STLNOR003302
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October 27, 2000
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FL-DOH Certification# E86349, 86413, 86565

Site Location/Project
.
Riverdale

Sample I.D.: SL78-1.5'
Collected: 10/20/00 10:10
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	77.3	%	160.3(ASTM-D221	0.01	10/25/2000	10/26/2000	EF/CT
8081A Chlorinated Pesticides & PCBs in Solids			MEDF	1			
a-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
b-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
BHC (lindane)	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
d-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Aldrin	I-1.6	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor Epoxide	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan I	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Dieldrin	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
4,4-DDE	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan II	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDD	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin Aldehyde	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Endosulfan Sulfate	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDT	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT

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Sample I.D.: SL78-1.5'
Collected: 10/20/00 10:10
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Methoxychlor	BDL	ug/Kg	3550/8081A-82	180.000	10/25/2000	10/26/2000	JT
Arochlor 1016	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1221	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1232	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
ochlor 1242	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1248	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1254	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1260	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Toxaphene	BDL	ug/Kg	3550/8081A-82	250.000	10/25/2000	10/26/2000	JT
Chlordane	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
8151A Chlorophenoxy Herbicides in Soil, Wastes			MEDF	1			
Dalapon	BDL	ug/Kg	8151A	1160.000	10/25/2000	10/27/2000	JT
Dicamba	BDL	ug/Kg	8151A	54.000	10/25/2000	10/27/2000	JT
2,4-D	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
Pentachlorophenol	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
2,4,5-TP (silvex)	BDL	ug/Kg	8151A	34.000	10/25/2000	10/27/2000	JT
2,4,5-T	BDL	ug/Kg	8151A	30.000	10/25/2000	10/27/2000	JT
Dinoseb	BDL	ug/Kg	8151A	14.000	10/25/2000	10/27/2000	JT

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Picloram	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
Dichloroprop	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
2,4-DB	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
MCPP	BDL	ug/Kg	8151A	660.000	10/25/2000	10/27/2000	JT
?PA	BDL	ug/Kg	8151A	430.000	10/25/2000	10/27/2000	JT

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effected Dilution Factor***
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Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
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Certs:Al.=#41180, Ct.=#PH0217, Ks.=#E270 + E1245, Ky.=#90087, La.=#9601, Md.=#271, Ma.=#M-FL535 NC.=#539, ND.=#R163, OK.=#9523, SC.=#96023, Tn.=#TN02826

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Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	79.3	%	160.3(ASTM-D221	0.01	10/25/2000	10/26/2000	EF/CT
8081A Chlorinated Pesticides & PCBs in Solids			MEDF	1			
a-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
b-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
BHC (lindane)	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Aldrin	16.6	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor Epoxide	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan I	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Dieldrin	I-3.0	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
4,4-DDE	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan II	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDD	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin Aldehyde	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Endosulfan Sulfate	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDT	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT

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PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Methoxychlor	BDL	ug/Kg	3550/8081A-82	180.000	10/25/2000	10/26/2000	JT
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Arochlor 1221	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1232	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1242	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
ochlor 1248	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1254	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1260	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Toxaphene	BDL	ug/Kg	3550/8081A-82	250.000	10/25/2000	10/26/2000	JT
Chlordane	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
8151A Chlorophenoxy Herbicides in Soil, Wastes			MEDF	1			
Dalapon	BDL	ug/Kg	8151A	1160.000	10/25/2000	10/27/2000	JT
Dicamba	BDL	ug/Kg	8151A	54.000	10/25/2000	10/27/2000	JT
2,4-D	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
Pentachlorophenol	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
2,4,5-TP (silvex)	BDL	ug/Kg	8151A	34.000	10/25/2000	10/27/2000	JT
2,4,5-T	BDL	ug/Kg	8151A	30.000	10/25/2000	10/27/2000	JT
Dinoseb	BDL	ug/Kg	8151A	14.000	10/25/2000	10/27/2000	JT

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PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Picloram	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
Dichloroprop	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
2,4-DB	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
MCPP	BDL	ug/Kg	8151A	660.000	10/25/2000	10/27/2000	JT
MCPA	BDL	ug/Kg	8151A	430.000	10/25/2000	10/27/2000	JT

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effected Dilution Factor***
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Certs:Al.=#41180, Ct.=#PH0217, Ks.=#E270 + E1245, Ky.=#90087, La.=#9601, Md.=#271, Ma.=#M-FL535
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Sample I.D.: SL79-2.5'
Collected: 10/20/00 10:20
Received: 10/25/00 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	79.3	%	160.3(ASTM-D221	0.01	10/25/2000	10/26/2000	EF/CT
8081A Chlorinated Pesticides & PCBs in Solids			MEDF	1			
a-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
b-BHC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
g-BHC (lindane)	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
dC	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Aldrin	404	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Heptachlor Epoxide	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan I	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Dieldrin	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
4,4-DDE	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endosulfan II	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDD	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
Endrin Aldehyde	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Endosulfan Sulfate	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
4,4-DDT	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT

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PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Methoxychlor	BDL	ug/Kg	3550/8081A-82	180.000	10/25/2000	10/26/2000	JT
Arochlor 1016	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
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Arochlor 1242	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1248	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1254	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Arochlor 1260	BDL	ug/Kg	3550/8081A-82	20.000	10/25/2000	10/26/2000	JT
Toxaphene	BDL	ug/Kg	3550/8081A-82	250.000	10/25/2000	10/26/2000	JT
Chlordane	BDL	ug/Kg	3550/8081A-82	10.000	10/25/2000	10/26/2000	JT
8151A Chlorophenoxy Herbicides in Soil, Wastes			MEDF	1			
Dalapon	BDL	ug/Kg	8151A	1160.000	10/25/2000	10/27/2000	JT
Dicamba	BDL	ug/Kg	8151A	54.000	10/25/2000	10/27/2000	JT
2,4-D	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
Pentachlorophenol	BDL	ug/Kg	8151A	240.000	10/25/2000	10/27/2000	JT
2,4,5-TP (silvex)	BDL	ug/Kg	8151A	34.000	10/25/2000	10/27/2000	JT
2,4,5-T	BDL	ug/Kg	8151A	30.000	10/25/2000	10/27/2000	JT
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Dichloroprop	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
2,4-DB	BDL	ug/Kg	8151A	100.000	10/25/2000	10/27/2000	JT
MCPP	BDL	ug/Kg	8151A	660.000	10/25/2000	10/27/2000	JT
MCPA	BDL	ug/Kg	8151A	430.000	10/25/2000	10/27/2000	JT

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Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
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Certs:Al.=#41180, Ct.=#PH0217, Ks.=#E270 + E1245, Ky.=#90087, La.=#9601, Md.=#271, Ma.=#M-FL535
NC.=#539, ND.=#R163, OK.=#9523, SC.=#96023, Tn.=#TN02826

Authorized Laboratory Management

Appendix F
IEPA Information

Section 742.APPENDIX A: General

Section 742.TABLE G: Concentrations of Inorganic Chemicals in Background Soils

Chemical Name	Counties Within Metropolitan Statistical Areas[a] (mg/kg)	Counties Outside Metropolitan Statistical Areas (mg/kg)
Aluminum	9,500	9,200
Antimony	4.0	3.3
Arsenic	7.2	5.2
Barium	110	122
Beryllium	0.59	0.56
Cadmium	0.6	0.50
Calcium	9,300	5,525
Chromium	16.2	13.0
Cobalt	8.9	8.9
Copper	19.6	12.0
Cyanide	0.51	0.50
Iron	15,900	15,000
Lead	36.0	20.9
Magnesium	4,820	2,700
Manganese	636	630
Mercury	0.06	0.05

[a]Counties within Metropolitan Statistical Areas: Boone, Champaign, Clinton, Cook, DuPage, Grundy, Henry, Jersey, Kane, Kankakee, Kendall, Lake, Macon, Madison, McHenry, McLean, Menard, Monroe, Peoria, Rock Island, Sangamon, St. Clair, Tazewell, Will, Winnebago and Woodford.

Chemical Name	Counties Within Metropolitan Statistical Areas[a] (mg/kg)	Counties Outside Metropolitan Statistical Areas (mg/kg)
Nickel	18.0	13.0
Potassium	1,268	1,100
Selenium	0.48	0.37
Silver	0.55	0.50
Sodium	130	130.0
Sulfate	85.5	110
Sulfide	3.1	2.9
Thallium	0.32	0.42
Vanadium	25.2	25.0
Zinc	95.0	60.2

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.Table B: Tier 1 Soil Remediation Objectives[a] for Industrial/Commercial Properties

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	ClassII (mg/kg)	ADL (mg/kg)
83-32-9	Acenaphthene	120,000[b]	-----[c]	120,000[b]	-----[c]	570[b]	2,900	*
67-64-1	Acetone	200,000[b]	100,000[d]	200,000[b]	100,000[d]	16[b]	16	*
15972-60-8	Alachlor[o]	72[e]	-----[c]	1,600[e]	-----[c]	0.04	0.2	NA
116-06-3	Aldicarb[o]	2,000[b]	-----[c]	200[b]	-----[c]	0.013	0.07	NA
309-00-2	Aldrin	0.3[e]	6.6[e]	6.1[b]	9.3[e]	0.5[e]	2.5	*
120-12-7	Anthracene	610,000[b]	-----[c]	610,000[b]	-----[c]	12,000[b]	59,000	*
1912-24-9	Atrazine[o]	72,000[b]	-----[c]	7,100[b]	-----[c]	0.066	0.33	NA
71-43-2	Benzene	200[e]	1.5[e]	4,300[e]	2.1[e]	0.03	0.17	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
56-55-3	Benzo(*a*)anthracene	8[e]	-----[c]	170[e]	-----[c]	2	8	*
205-99-2	Benzo(*b*)fluoranthene	8[e]	-----[c]	170[e]	-----[c]	5	25	*
207-08-9	Benzo(*k*)fluroanthene	78[e]	-----[c]	1,700[e]	-----[c]	49	250	*
50-32-8	Benzo(*a*)pyrene	0.8[e]	-----[c]	17[e]	-----[c]	8	82	*
111-44-4	Bis(2-chloroethyl)ether	5[e]	0.47[e]	75[e]	0.66[e]	0.0004[e,f]	0.0004	0.66
117-81-7	Bis(2-ethylhexyl)phthalate	410[e]	31,000[d]	4,100[b]	31,000[d]	3,600	31,000[d]	*
75-27-4	Bromodichloromethane (Dichlorobromomethane)	92[e]	3,000[d]	2,000[e]	3,000[d]	0.6	0.6	*
75-25-2	Bromoform	720[e]	100[e]	16,000[e]	140[e]	0.8	0.8	*
71-36-3	Butanol	200,000[b]	10,000[d]	200,000[b]	10,000[d]	17[b]	17	NA
85-68-7	Butyl benzyl phthalate	410,000[b]	930[d]	410,000[b]	930[d]	930[d]	930[d]	*
86-74-8	Carbazole	290[e]	-----[c]	6,200[e]	-----[c]	0.6[e]	2.8	NA

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
1563-66-2	Carbofuran[a]	10,000[b]	-----[c]	1,000[b]	-----[c]	0.22	1.1	NA
75-15-0	Carbon disulfide	200,000[b]	720[d]	20,000[b]	9.0[b]	32[b]	160	*
56-23-5	Carbon tetrachloride	44[e]	0.64[e]	410[b]	0.90[e]	0.07	0.33	*
57-74-9	Chlordane	4[e]	38[e]	12[b]	53[e]	10	48	*
106-47-8	4 - Chloroaniline (*p*-Chloroaniline)	8,200[b]	-----[c]	820[b]	-----[c]	0.7[b]	0.7	1.3
108-90-7	Chlorobenzene (Monochlorobenzene)	41,000[b]	210[b]	4,100[b]	1.3[b]	1	6.5	*
124-48-1	Chlorodibromomethane (Dibromochloromethane)	41,000[b]	1,300[d]	41,000[b]	1,300[d]	0.4	0.4	*
67-66-3	Chloroform	940[e]	0.54[e]	2,000[b]	0.76[e]	0.6	2.9	*
218-01-9	Chrysene	780[e]	-----[c]	17,000[e]	-----[c]	160	800	*
94-75-7	2,4-D	20,000[b]	-----[c]	2,000[b]	-----[c]	1.5	7.7	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
75-99-0	Dalapon	61,000[b]	-----[c]	6,100[b]	-----[c]	0.85	8.5	1.2
72-54-8	DDD	24[e]	-----[c]	520[e]	-----[c]	16[e]	80	*
72-55-9	DDE	17[e]	-----[c]	370[e]	-----[c]	54[e]	270	*
50-29-3	DDT	17[e]	1,500[e]	100[b]	2,100[e]	32[e]	160	*
53-70-3	Dibenzo(*a,h*)anthracene	0.8[e]	-----[c]	17[e]	-----[c]	2	7.6	*
96-12-8	1,2-Dibromo-3-chloropropane	4[e]	17[b]	89[e]	0.11[b]	0.002	0.002	*
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.07[e]	0.32[e]	1.5[e]	0.45[e]	0.0004	0.004	0.005
84-74-2	Di-*n*-butyl phthalate	200,000[b]	2,300[d]	200,000[b]	2,300[d]	2,300[d]	2,300[d]	*
95-50-1	1,2-Dichlorobenzene (*o* - Dichlorobenzene)	180,000[b]	560[d]	18,000[b]	310[b]	17	43	*
106-46-7	1,4-Dichlorobenzene (*p* - Dichlorobenzene)	-----[c]	17,000[b]	-----[c]	340[b]	2	11	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
91-94-1	3,3'-Dichlorobenzidine	13[c]	-----[c]	280[c]	-----[c]	0.007[c,f]	0.033	1.3
75-34-3	1,1-Dichloroethane	200,000[b]	1,700[d]	200,000[b]	130[b]	23[b]	110	*
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	63[c]	0.70[c]	1,400[c]	0.99[c]	0.02	0.1	*
75-35-4	1,1-Dichloroethylene	18,000[b]	1,500[d]	1,800[b]	1,500[d]	0.06	0.3	*
156-59-2	*cis*-1,2-Dichloroethylene	20,000[b]	1,200[d]	20,000[b]	1,200[d]	0.4	1.1	*
156-60-5	*trans*-1,2-Dichloroethylene	41,000[b]	3,100[d]	41,000[b]	3,100[d]	0.7	3.4	*
78-87-5	1,2-Dichloropropane	84[c]	23[b]	1,800[c]	0.50[b]	0.03	0.15	*
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, *cis* + *trans*)	33[c]	0.23[c]	610[b]	0.33[c]	0.004[c]	0.02	0.005
60-57-1	Dieldrin[n]	0.4[c]	2.2[c]	7.8[c]	3.1[c]	0.004[c]	0.02	0.0013
84-66-2	Diethyl phthalate	1,000,000[b]	2,000[d]	1,000,000[b]	2,000[d]	470[b]	470	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
105-67-9	2,4-Dimethylphenol	41,000[b]	-----[c]	41,000[b]	-----[c]	9[b]	9	*
121-14-2	2,4-Dinitrotoluene	8.4[e]	-----[c]	180[e]	-----[c]	0.0008[e,f]	0.0008	0.013
606-20-2	2,6-Dinitrotoluene	8.4[e]	-----[c]	180[e]	-----[c]	0.0007[e,f]	0.0007	0.0067
117-84-0	Di-*n*-octyl phthalate	41,000[e]	10,000[d]	4,100[b]	10,000[d]	10,000[d]	10,000[d]	*
115-29-7	Endosulfan	12,000[b]	-----[c]	1,200[b]	-----[c]	18[b]	90	*
145-73-3	Endothall[e]	41,000[e]	-----[c]	4,100[b]	-----[c]	0.4	0.4	NA
72-20-8	Endrin	610[b]	-----[c]	61[b]	-----[c]	1	5	*
100-41-4	Ethylbenzene	200,000[b]	400[d]	20,000[b]	58[b]	13	19	*
206-44-0	Fluoranthene	82,000[b]	-----[c]	82,000[b]	-----[c]	4,300[b]	21,000	*
86-73-7	Fluorene	82,000[b]	-----[c]	82,000[b]	-----[c]	560[b]	2,800	*
76-44-8	Heptachlor	1[e]	11[e]	28[e]	16[e]	23	110	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
1024-57-3	Heptachlor epoxide	0.6[e]	9.2[e]	2.7[b]	13[e]	0.7	3.3	*
118-74-1	Hexachlorobenzene	4[e]	1.8[e]	78[e]	2.6[e]	2	11	*
319-84-6	*alpha*-HCH (*alpha*-BHC)	0.9[e]	1.5[e]	20[e]	2.1[e]	0.0005[e,f]	0.003	0.002
58-89-9	*gamma*-HCH (Lindane)[n]	4[e]	-----[c]	96[e]	-----[c]	0.009	0.047	*
77-47-4	Hexachlorocyclopentadiene	14,000[b]	16[b]	14,000[b]	1.1[b]	400	2,200[d]	*
67-72-1	Hexachloroethane	2,000[b]	-----[c]	2,000[b]	-----[c]	0.5[b]	2.6	*
193-39-5	Indeno(1,2,3-*c,d*)pyrene	8[e]	-----[c]	170[e]	-----[c]	14	69	*
78-59-1	Isophorone	410,000[b]	4,600[d]	410,000[b]	4,600[d]	8[b]	8	*
72-43-5	Methoxychlor	10,000[b]	-----[c]	1,000[b]	-----[c]	160	780	*
74-83-9	Methyl bromide (Bromomethane)	2,900[b]	15[b]	1,000[b]	3.9[b]	0.2[b]	1.2	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
75-09-2	Methylene chloride (Dichloromethane)	760[e]	24[e]	12,000[b]	34[e]	0.02[e]	0.2	*
95-48-7	2-Methylphenol (*o* - Cresol)	100,000[b]	-----[c]	100,000[b]	-----[c]	15[b]	15	*
86-30-6	*N*-Nitrosodiphenylamine	1,200[e]	-----[c]	25,000[e]	-----[c]	1[e]	5.6	0.66
621-64-7	*N*-Nitrosodi-*n*-propylamine	0.8[e]	-----[c]	18[e]	-----[c]	0.00005[e,f]	0.00005	0.66
91-20-3	Naphthalene	82,000[b]	-----[c]	8,200[b]	-----[c]	84[b]	420	*
98-95-3	Nitrobenzene	1,000[b]	140[b]	1,000[b]	9.4[b]	0.1[b,f]	0.1	0.26
108-95-2	Phenol	1,000,000[b]	-----[c]	120,000[b]	-----[c]	100[b]	100	*
1918-02-1	Picloram[o]	140,000[b]	-----[c]	14,000[b]	-----[c]	2	20	NA
1336-36-3	Polychlorinated biphenyls (PCBs)[n]	1; 10; 25[h]	-----[c,h]	1[h]	-----[c,h]	-----[h]	-----[h]	*
129-00-0	Pyrene	61,000[b]	-----[c]	61,000[b]	-----[c]	4,200[b]	21,000	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
122-34-9	Simazine[o]	10,000[b]	-----[c]	1,000[b]	-----[c]	0.04	0.37	NA
100-42-5	Styrene	410,000[b]	1,500[d]	41,000[b]	430[b]	4	18	*
127-18-4	Tetrachloroethylene (Perchloroethylene)	110[e]	20[e]	2,400[e]	28[e]	0.06	0.3	*
108-88-3	Toluene	410,000[b]	650[d]	410,000[b]	42[b]	12	29	*
8001-35-2	Toxaphene[n]	5.2[e]	170[e]	110[e]	240[e]	31	150	*
120-82-1	1,2,4-Trichlorobenzene	20,000[b]	3,200[d]	2,000[b]	920[b]	5	53	*
71-55-6	1,1,1-Trichloroethane	-----[c]	1,200[d]	-----[c]	1,200[d]	2	9.6	*
79-00-5	1,1,2-Trichloroethane	8,200[b]	1,800[d]	8,200[b]	1,800[d]	0.02	0.3	*
79-01-6	Trichloroethylene	520[e]	8.9[e]	1,200[b]	12[e]	0.06	0.3	*
108-05-4	Vinyl acetate	1,000,000[b]	1,600[b]	200,000[b]	10[b]	170[b]	170	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
75-01-4	Vinyl chloride	3[e]	0.06[e]	65[e]	0.08[e]	0.01[f]	0.07	*
108-38-3	m-Xylene	1,000,000	420[d]	410,000[b]	420[d]	210	210	*
95-47-6	o-Xylene	1,000,000	410[d]	410,000[b]	410[d]	190	190	*
106-42-3	p-Xylene	1,000,000	460[d]	410,000[b]	460[d]	200	200	*
1330-20-7	Xylenes (total)	1,000,000[b]	410[d]	410,000[b]	410[d]	150	150	*
	Ionizable Organics							
65-85-0	Benzoic Acid	1,000,000[b]	-----[c]	820,000[b]	-----[c]	400[b,i]	400[i]	*
95-57-8	2-Chlorophenol	10,000[b]	53,000[d]	10,000[b]	53,000[d]	4[b,i]	20[i]	*
120-83-2	2,4-Dichlorophenol	6,100[b]	-----[c]	610[b]	-----[c]	1[b,i]	1[i]	*
51-28-5	2,4-Dinitrophenol	4,100[b]	-----[c]	410[b]	-----[c]	0.2[b,f,i]	0.2[i]	3.3
88-85-7	Dinoseb[n]	2,000[b]	-----[c]	200[b]	-----[c]	0.34[b,i]	3.4[i]	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
87-86-5	Pentachlorophenol	24[e,j]	-----[c]	520[e,j]	-----[c]	0.03[f,i]	0.14[i]	2.4
93-72-1	2,4,5-TP (Silvex)	16,000[b]	-----[c]	1,600[b]	-----[c]	11[i]	55[i]	*
95-95-4	2,4,5-Trichlorophenol	200,000[b]	-----[c]	200,000[b]	-----[c]	270[b,i]	1,400[i]	*
88-06-2	2,4,6- Trichlorophenol	520[e]	390[e]	11,000[e]	540[e]	0.2[e,f,i]	0.77[i]	0.43

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	
	Inorganics							
7440-36-0	Antimony	820[b]	-----[c]	82[b]	-----[c]	0.006[m]	0.024[m]	*
7440-38-2	Arsenic[l,n]	3[e,t]	1,200[e]	61[b]	25,000[e]	0.05[m]	0.2[m]	
7440-39-3	Barium	140,000[b]	910,000[b]	14,000[b]	870,000[b]	2.0[m]	2.0[m]	*
7440-41-7	Beryllium	1[e,t]	2,100[e]	29[e]	44,000[e]	0.004[m]	0.5[m]	*
7440-42-8	Boron	180,000[b]	1,000,000	18,000[b]	1,000,000	2.0[m]	2.0[m]	*
7440-43-9	Cadmium[l,n]	2,000[b,r]	2,800[e]	200[b,r]	59,000[e]	0.005[m]	0.05[m]	*
16887-00-6	Chloride	-------[c]	-----[c]	-----[c]	-----[c]	200[m]	200[m]	*
7440-47-3	Chromium, total	10,000[b]	420[e]	4,100[b]	8,800[e]	0.1[m]	1.0[m]	*
16065-83-1	Chromium, ion, trivalent	1,000,000[b]	-----[c]	330,000[b]	-----[c]	-----[g]	-----[g]	*
18540-29-9	Chromium, ion, hexavalent	10,000[b]	420[e]	4,100[b]	8,800[e]	-----	-----	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	
7440-48-4	Cobalt	120,000[b]	----[c]	12,000[b]	----[c]	1.0[m]	1.0[m]	*
7440-50-8	Copper[n]	82,000[b]	----[c]	8,200[b]	----[c]	0.65[m]	0.65[m]	*
57-12-5	Cyanide (amenable)	41,000[b]	----[c]	4,100[b]	----[c]	0.2[q]	0.6[q]	*
7782-41-4	Fluoride	120,000[b]	----[c]	12,000[b]	----[c]	4.0[m]	4.0[m]	*
15438-31-0	Iron	----[c]	----[c]	----[c]	----[c]	5.0[m]	5.0[m]	*
7439-92-1	Lead	400[k]	----[c]	400[k]	----[c]	0.0075[m]	0.1[m]	*
7439-96-5	Manganese	96,000[b]	91,000[b]	9,600[b]	8,700[b]	0.15[m]	10.0[m]	*
7439-97-6	Mercury[l,o]	610[b]	540,000[b]	61[b,s]	52,000[b]	0.002[m]	0.01[m]	*
7440-02-0	Nickel[l]	41,000[b]	21,000[e]	4,100[b]	440,000[e]	0.1[m]	2.0[m]	*
14797-55-8	Nitrate as N[p]	1,000,000[b]	----[c]	330,000[b]	----[c]	10.0[q]	100[q]	*
7782-49-2	Selenium[l,n]	10,000[b]	----[c]	1,000[b]	----[c]	0.05[m]	0.05[m]	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	
7440-22-4	Silver	10,000[b]	----[c]	1,000[b]	----[c]	0.05[m]	-----	*
14808-79-8	Sulfate	----[c]	----[c]	----[c]	----[c]	400[m]	400[m]	*
7440-28-0	Thallium	160[b,u]	----[c]	160[b,u]	----[c]	0.002[m]	0.02[m]	*
7440-62-2	Vanadium	14,000[b]	----[c]	1,400[b]	----[c]	0.049[m]	-----	*
7440-66-6	Zinc[t]	610,000[b]	----[c]	61,000[b]	----[c]	5.0[m]	10[m]	*

"*" indicates that the ADL is less than or equal to the specified remediation objective.

NA means Not Available; no PQL or EQL available in USEPA analytical methods.

Chemical Name and Soil Remediation Objective Notations (2nd, 5th thru 8th Columns)

[a] Soil remediation objectives based on human health criteria only.
[b] Calculated values correspond to a target hazard quotient of 1.
[c] No toxicity criteria available for this route of exposure.
[d] Soil saturation concentration ($C_{[sat]}$) = the concentration at which the absorptive limits of the soil particles, the solubility limits of the available soil moisture, and saturation of soil pore air have been reached. Above the soil saturation concentration, the assumptions regarding vapor transport to air and/or dissolved phase transport to groundwater (for chemicals which are liquid at ambient soil temperatures) have been violated, and alternative modeling approaches are required.
[e] Calculated values correspond to a cancer risk level of 1 in 1,000,000.
[f] Level is at or below Contract Laboratory Program required quantitation limit for Regular Analytical Services (RAS).
[g] Chemical-specific properties are such that this route is not of concern at any soil contaminant concentration.
[h] A preliminary goal of 1 ppm has been set for PCBs based on *Guidance on Remedial Actions for Superfund Sites with PCB Contamination* , EPA/540G-90/007, and on USEPA efforts to manage PCB contamination. See 40 CFR 761.120 for USEPA "PCB Spill Cleanup Policy." This regulation goes on to say that the remediation goal for an unrestricted area is 10 ppm and 25 ppm for a restricted area, provided both have at least 10 inches of clean cover.
[i] Soil remediation objective for pH of 6.8. If soil pH is other than 6.8, refer to Appendix B, Tables C and D in this Part.
[j] Ingestion soil remediation objective adjusted by a factor of 0.5 to account for dermal route.
[k] A preliminary remediation goal of 400 mg/kg has been set for lead based on *Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities* , OSWER Directive #9355.4-12.
[l] Potential for soil-plant-human exposure.
[m] The person conducting the remediation has the option to use: (1) TCLP or SPLP test results to compare with the remediation objectives listed in this Table; or (2) the total amount of contaminant in the soil sample results to compare with pH specific remediation objectives listed in Appendix B, Table C or D of this Part. (See Section 742.510.) If the person conducting the remediation wishes to calculate soil remediation objectives based on background concentrations, this should be done in accordance with Subpart D of this Part.
[n] The Agency reserves the right to evaluate the potential for remaining contaminant concentrations to pose significant threats to crops, livestock, or wildlife.
[o] For agrichemical facilities, remediation objectives for surficial soils which are based on field application rates may be more appropriate for currently registered pesticides. Consult the Agency for further information.
[p] For agrichemical facilities, soil remediation objectives based on site-specific background concentrations of Nitrate as N may be more appropriate. Such determinations shall be conducted in accordance with the located in Subparts D and I of this Part.
[q] The TCLP extraction must be done using water at a pH of 7.0.
r Value based on dietary Reference Dose.
s Value based on Reference Dose for Mercuric chloride (CAS No. 7487-94-7).
t Note that Table value is likely to be less than background concentration for this chemical; screening or remediation concentrations using the procedures of Subpart D of this Part.

[u] Value based on Reference Dose for thallium sulfate (CAS No. 7446-18-6).